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THE SIGHT-SAVING REVIEW

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THE SIGHT-SAVING REVIEW

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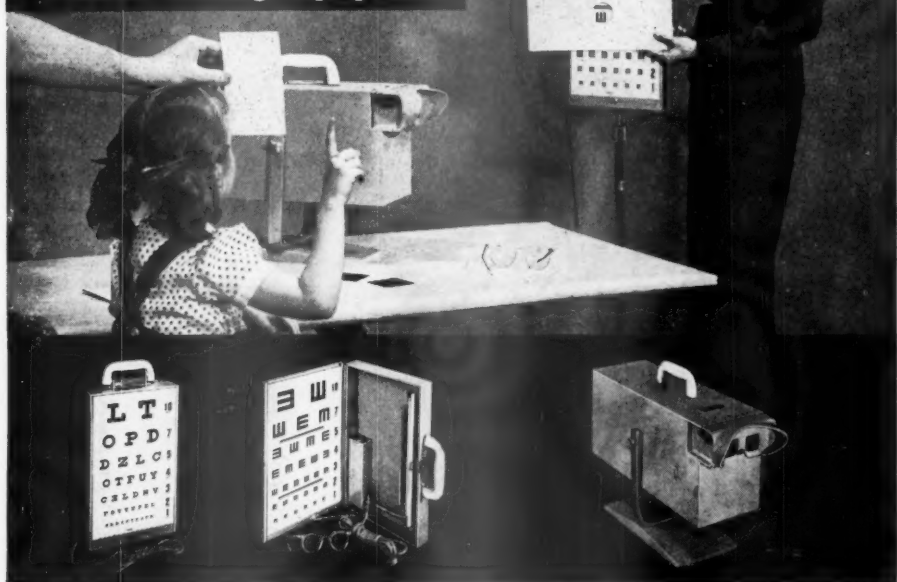
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THE TREATMENT OF TRACHOMA

PHILLIPS THYGESON, M.D.

San Jose, California

The outlook for eradication of the disease has greatly improved since the introduction of sulfonamide treatment in 1938. The link between trachoma and poverty has been a limiting factor in the underdeveloped areas of the world.*

IN spite of the fact that trachoma has responded satisfactorily to chemotherapy since 1938, it is still the eye disease of greatest worldwide distribution and importance as a cause of visual disability. It is the only eye disease with its own journal (*Revue Internationale du Trachome*), its own medical society (The International Organization Against Trachoma), and its own special hospitals and institutes throughout the world. It is also the only eye disease deemed of sufficient importance by the World Health Organization to warrant the establishment of an Expert Panel and Expert Committees for its consideration.

Trachoma is a disease of antiquity and is known to have been distributed widely throughout the ancient world. It was one of the first clinical entities to be described in ancient medical writings in clearly recognizable terms as, for example, in the Ebers Papyrus of the 15th century B.C. Although trachoma itself was not described in the earliest Chinese writings a description of one of its most serious complications, trichiasis, does appear, so that in all probability the disease

was widespread in Asia at a very early time. In early Greek and Roman writings the frequency, complications and treatment of the disease are often referred to, but the name "trachoma" did not appear until the first century A.D., in the writings of Dioscorides Pedanius. The term was derived from the Greek "trachys" meaning "rough" and referred of course to the granulations on the conjunctiva. It is of interest that Aristotle was familiar with the disease and mentioned the possibility of contagion.

Many of the prominent figures of the ancient world are believed to have had both trachoma and the bacterial conjunctivitis characteristically associated with it. Hannibal lost an eye from an "ophthalmia," and Pliny the Younger, Horace, and later Paul of Tarsus and Cicero are believed to have had the disease. Probably it was trachoma that stimulated specialization in the care of the eye. Oculists, the first medical specialists, are known to have been numerous in the ancient world and many of their remedies for trachoma have come down to us. Chief among these are the salts of copper which are today still in use in certain parts of the world, and which were universally the most common and im-

* From the Department of Ophthalmology and the Francis I. Proctor Foundation for Research in Ophthalmology, University of California School of Medicine, San Francisco.

portant form of treatment until the introduction of the sulfonamides in 1938.

Early Methods of Treatment

Surgical and mechanical methods of treating trachoma and its sequelae were also known in ancient times. Hippocrates mentions a procedure called "blepharoxysis" in which the trachomatous granulations were crushed and expressed mechanically prior to the application of copper salts. A method of treating trichiasis and entropion consisted in the excision of skin from the upper lid in an amount sufficient to effect an eversion of the lid margin. This was often done by producing a pressure necrosis of the skin between two small pieces of wood tied together over the skin flap. Similar methods are still in use in the Arab world today. The more difficult excision of the lash line for relief of trichiasis was also practiced in the ancient world. Of course very little is known of the results of these various medical and surgical procedures, but one may be sure they had very little effect on the underlying trachomatous disease.

In the period of the relatively high development of medicine in the Arab countries following the destruction of the Greek and Roman Empires some new knowledge of trachoma was acquired. For the first time a clear separation was made between trachoma and the associated infections now known to be bacterial in nature. The oculist Ali Ibn el Aissa, living in the 10th century in Bagdad, wrote a celebrated treatise, one chapter of which was devoted to trachoma and included a description of four of its stages. In this period some refinements

of method in treating the cicatricial complications were developed but nothing new evolved for the treatment of the disease itself.

Relationship to the Military

It was during the Crusades that trachoma became a military problem affecting an important number of Europeans. When the soldiers of the Cross returned to their homelands after each crusade the disease was transmitted to their families and was soon widely distributed throughout Europe. The relationship to military enterprise was so characteristic that in this period the disease was often referred to as "military ophthalmia." The medical men of the Middle Ages recognized its importance and its origin in the Middle East but failed to contribute materially to the knowledge of methods of prevention or treatment.

After the Crusades trachoma continued to be almost universal in North Africa and the Middle East. In Europe, however, and especially in northern Europe, it gradually diminished until the time of the Napoleonic Wars. It was Napoleon's unhappy campaign in Egypt that precipitated a major recrudescence of the disease among Europeans. The so-called "Egyptian ophthalmia," a mixture of trachoma and bacterial conjunctivitis, affected a high proportion of Napoleon's troops and was even more prevalent and virulent among his English opponents. With the return of these soldiers to their homelands a great wave of trachoma spread over Europe. It was especially prevalent in the countries bordering the Mediterranean and in Belgium. Oculists of this period again recognized the association of pure trachoma with other conjunctivides but

made no progress with either prophylaxis or treatment. Treatment at this time consisted in the use of cauterizing agents on the conjunctiva at frequent intervals, in expression of the granulations, and surgical treatment of cicatricial complications that developed.

Introduction of the Sulfonamides

In 1907 Halberstaedter and Prowazek first saw in epithelial scrapings from the disease the inclusion bodies that are now recognized as the intracellular colonies of the causal virus, and in 1912 Nicolle, Cuenod and Blaizot established the filtrability of the causal agent. Not until 1938, however, when the sulfonamides were introduced, was there a break-through in treatment. Up to that time trachoma can be said to have been for practical purposes incurable since curative treatment was so long and drawn out and painful that few patients could be induced to seek it or to stay with it long enough to be cured. This ineffectuality of treatment method was well demonstrated in the campaign conducted among the American Indians in the 1930's. On the Fort Apache Reservation in Arizona, for example, trachomatous children were segregated in a boarding school and treated daily with copper sulphate, silver nitrate and other cauterizing agents throughout the entire school year. Many cases were improved and some were cured under this regime, but the children usually had to be kept in the school for two years or more before any demonstrable result was obtained.

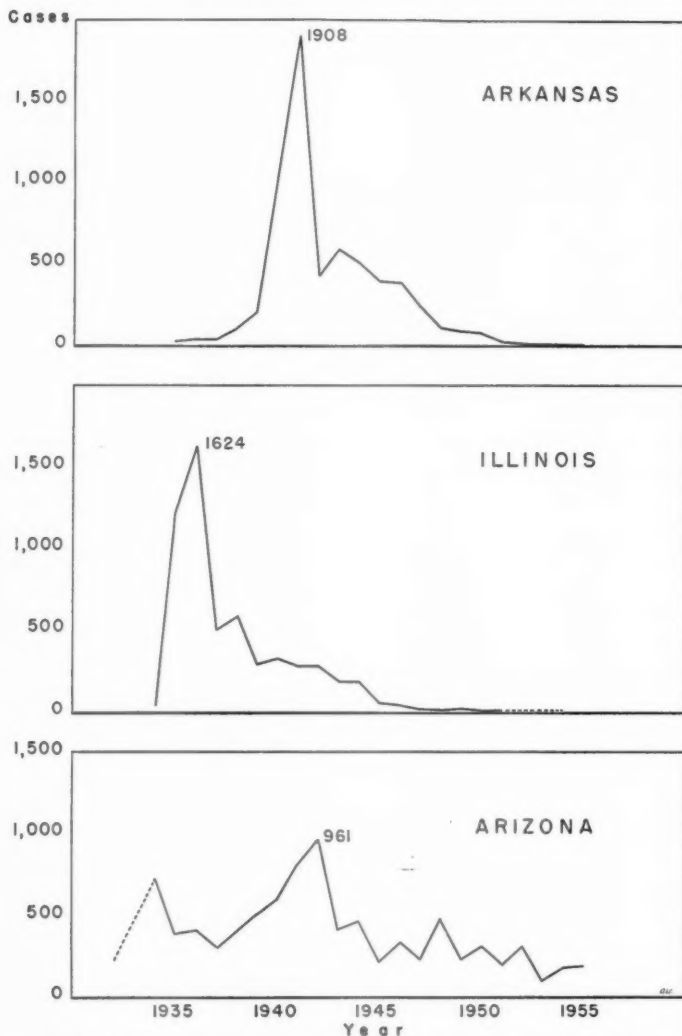
The sulfonamides were first used for trachoma in the United States by Loe, then of the Indian Service, who found that systemically administered sulfa-

nilamide was remarkably effective in the treatment of the disease, cures being achieved in a matter of weeks instead of the long months or years required by the cauterizing agents. Dr. Loe found that topical sulfonamides were also effective, but to a lesser degree and only when used at such frequent intervals as to maintain a constant concentration of the drug in the conjunctival sac. His findings were soon confirmed and the anti-trachoma campaign already initiated by the Indian Service was amplified under the direction of Dr. Francis I. Proctor, Consultant to the Office of Indian Affairs, and Dr. Polk Richards, who was named Director of Trachoma Activities. In this campaign, which lasted from 1938 until it was disrupted by World War II, the great majority of the Indian children in the schools and a smaller number of adults were given sulfonamide treatment. Sulfanilamide was the drug usually administered at this time but other sulfonamides were found later to be equally efficacious and less toxic. The results of this successful campaign were summarized in a report by Forster and McGibony.

U. S. Areas Affected

In the white population of the United States trachoma was distributed chiefly along the so-called "trachoma belt" which followed the old Daniel Boone Trail across the Appalachian Mountains. About 75 per cent of the cases in our entire white population were in southern Illinois, Kentucky, southern Indiana, Missouri, Arkansas and Oklahoma, among the descendants of the original Scotch-Irish and English immigrants who pioneered these areas. Effective anti-

TRACHOMA CASE REPORTING



Variations in the cases reported are produced not only by improved treatment programs, but also by changes in the extent of case finding projects.

Data from U. S. Public Health Service.

trachoma campaigns were carried on in southern Illinois under the direction of Dr. Harry Gradle, and later under Dr. Peter Kronfeld; in Missouri in the Trachoma Hospital at Rolla; and in Arkansas under the direction of Dr. Cosgrove. In these state programs the sulfonamides were used almost exclusively. They were remarkably effective and at the present time few if any fresh cases are being seen in these areas. Occasional sporadic cases appear elsewhere in the United States, however, particularly in the New York area and in California among the Chinese and Japanese immigrants. These also are usually treated successfully with the sulfonamides and it can be said that as a direct result of the introduction of these drugs, trachoma in this segment of the population is well under control in the United States.

Unfortunately the same cannot be said of the Indian population. The very effective anti-trachoma campaign conducted early in the 1940's had to be abandoned during the war because of the shortage of personnel and was not reactivated after the war, probably because too sanguine a view of the trachoma situation was taken in the postwar years. It has been recognized recently, however, that there has been a recrudescence of the disease, particularly among the tribes of the southwest and an intensive trachoma detection and treatment program is now under way.

Low Doses Effective

It is generally agreed on the basis of experience with the sulfonamides in Europe and the United States that they are an effective treatment of trachoma when properly employed.

Some relative failures have been reported from Asia and the Middle East but these are believed to have resulted primarily from inadequate treatment times. Experience has shown that high doses are unnecessary, and that low doses over a long period of time are more effective than high doses over a short period of time. This is due to the fact that the sulfonamides are not virucidal but simply act by inhibiting the intracellular development of the virus without destroying it, with the result that the virus is eventually eliminated by the normal desquamation of the corneal and conjunctival epithelial cells. In exceptional instances cures have obtained in treatment times as short as one week, but three weeks have given a much higher percentage of cures, and even longer times are sometimes required. The author never has encountered any instance of true sulfonamide resistance in trachoma treated by him although cases have varied considerably in the rapidity of their response. In general, early cases have been more responsive than late cases, and acute or subacute cases have been much more responsive than mild chronic cases.

There is little evidence to indicate that the use of sulfonamides topically as a supplement to oral therapy is of value except when dosage schedules are inadequate or there is marked secondary bacterial infection. In reviewing the trachoma literature one encounters the suggestion that the sulfonamides affect only secondary bacterial infection and not the virus itself. Such statements are based on the well-known fact that typical virus infections are not influenced by chemotherapy. Trachoma virus, however, is a large virus belonging to the psittaco-

sis-lymphogranuloma venereum group of viruses which are no longer classed with the typical viruses and, like the Rickettsiae, have enzyme systems which can be interrupted by sulfonamide and antibiotic therapy.

Use of Antibiotics

When penicillin became available in 1941 it was tried on trachoma but proved ineffective, except perhaps for the minor suppressive effect noted by Bietti. Streptomycin was found to be equally ineffective, although, like penicillin, it is remarkably useful in combatting the associated bacterial infections which often complicate trachoma, particularly in the Middle East. Aureomycin, on the other hand, was recognized at once as a valuable anti-trachoma weapon, and it was soon found that topical application was even more effective than systemic application. This is of course the reverse of the sulfonamide situation. Topical applications of terramycin, chloromycetin, and more recently of all the tetracycline antibiotics and the middle-spectrum antibiotic erythromycin, have since been found to be equally serviceable, not only in the treatment of trachoma but of the associated bacterial infections so prevalent in tropical countries.

Compared with the sulfonamides the antibiotics have the great advantage of safety in that systemic administration is unnecessary. Their chief disadvantage is that a more prolonged treatment time, six weeks instead of three, is usually required; a minor disadvantage is that ointments in the eye cause temporary blurring of vision and meet with a certain amount of patient resistance. It was the introduction of these antibiotics, however, that

primed and implemented the mass treatment campaigns now being conducted throughout the world, particularly in North Africa and the Middle East, under the auspices of the World Health Organization.

With these two sources of ammunition at hand, the treatment of a single case of trachoma is no longer a major problem. According to circumstance sulfonamides can be employed orally, or antibiotics topically, or the two methods can be combined with some shortening of the treatment time. The safety of systemic sulfonamide administration has been increased through the introduction of soluble sulfonamides which avoid the danger of kidney blockage through crystal formation. Occasional allergic or toxic reactions may occur but are now too rare to be considered a limiting factor.

Mass Treatment Campaigns

In mass campaigns, however, the situation is still far from ideal owing to the long treatment time required. When patients can be hospitalized there is no problem, but the vast majority of patients in the underdeveloped countries must be treated in schools or homes, and ignorance and superstition frequently interfere with treatment schedules, particularly for early cases with minimal symptoms. In the schools, with the cooperation of teachers, antibiotic ointments can usually be used successfully, but it has proved difficult, and sometimes impossible, to secure the coopération of parents for home treatment of either their children or themselves. In the United States this difficulty of providing treatment for adults has been particularly troublesome in connection with our Indian tribes. Many of them are no-

madic, and even among the tribes with fixed abodes the employment of the men as seasonal agricultural laborers far from home greatly complicates the problem. The fact that trachoma confers no immunity makes this difficulty in treating affected adults particularly unfortunate. Unless all the members with active disease living together in one household are cured, the children that have been treated successfully in the schools may very well be reinfectd when they return home.

In spite of these difficulties there has been some progress in the underdeveloped countries. It has been most striking in the control of the seasonal epidemics of Koch-Weeks and gonococcic infections (in the course of which there is normally a coincident spread of trachoma), and in the detection and treatment of severe cases which if untreated would most certainly develop severe cicatricial complications. The problem is now one of perfecting a treatment which, like the treatment for gonorrhea, will be of short duration and can be administered by survey teams at the time of diagnosis. Until such an improved treatment method can be developed, anti-trachoma campaigns must of necessity be costly and only partially effective. The cost can be reduced by combining the anti-trachoma activities with other health campaigns.

Economic and Educational Factors

While the greatest emphasis must of course be placed on detection and treatment in the heavily trachomatized areas, it should not be forgotten that the spread of trachoma is closely linked with the economic condition of a population, particularly as related to overcrowding and poor personal hygiene.

Trachoma acquired in infancy has a tendency to heal spontaneously, with minimal cicatricial changes, and in the Middle East is known to do so in as many as 30 per cent of affected children. It is recognized, however, that secondary bacterial infection has an unfavorable effect on the basic trachoma, tending to increase its activity, its communicability and its complications. The spread of these infections is very closely linked with overcrowding, poor personal hygiene and inadequate fly control. There is evidence to indicate that pure trachoma rarely spreads except by intimate personal contact, such as between mother and child. Clearly, then, improvement in economic health and in health education should serve to minimize the spread of the disease. In connection with the anti-trachoma campaigns among our American Indians and in North Africa, health education has been emphasized, and although it is questionable how effective posters, films and lectures may be among primitive populations, efforts along these lines should be continued as a supplement to treatment programs.

In this connection it is interesting to note that trachoma is one disease which seems to be independent of dietary influence. It has in fact been shown experimentally in monkeys that vitamin A deficiency is actually antagonistic to trachoma infection, and Wilson in his studies at Bahtim Village near Cairo found that all the children acquired trachoma before they were a year old—except a few marasmic infants.

It is to be expected that eventually surgical procedures in the treatment of the complications of trachoma will no longer be necessary, but for some

years to come the problems of trichiasis and entropion will plague the populations heavily infected with trachoma in Asia, North Africa and the Middle East. A great deal of visual damage can accrue in a case of healed trachoma by persistent entropion and trichiasis, mechanical injury to the cornea resulting from friction from the in-turned cilia. The fixed and mobile ophthalmic hospitals of Egypt have been particularly effective in handling these cicatricial complications among the Egyptian fellahin. Some progress has been made through keratoplasty in restoring sight to patients blinded by the corneal scars of trachoma. In general, however, the results of this procedure have been unfavorable due to the tendency of the grafts to become opaque and vascularized. It is to be hoped that further research on keratoplasty will provide means of helping the still important numbers of victims blinded by trachoma.

In 1952 the World Health Organization called into session an Expert Committee to advise on the best methods of controlling trachoma and to plan further research. The findings of this Committee were the subject of a report containing valuable information on methods of diagnosis and treatment. In 1955 a Second Expert Committee was called to plan mass treatment campaigns on the basis of an evaluation of the pilot campaigns that had been conducted in Asia, North Africa and the Middle East. The findings of this Committee are available in a Second Report and indicate that considerable progress has been made in the techniques of mass anti-trachoma campaigning. The World Health Organization has served a most valuable function in providing a clearinghouse

for information on trachoma, in facilitating the distribution of research material to interested investigators, and in giving trachomatologists from all parts of the world an opportunity to pool their experience, discuss their problems exhaustively, and reach agreement on most of the controversial points bearing on detection and treatment.

It can be concluded that the outlook for the eradication of trachoma has greatly improved since 1938. In Europe, for example, the disease has actually been eliminated from such countries as England and Austria by intensive sulfonamide campaigns. The link between trachoma and poverty has been a limiting factor in the underdeveloped areas of the world, but some progress has been made, particularly with respect to the prevention of complications. If future research yields a treatment as effective as the modern sulfonamides and antibiotics, but requiring a short instead of a long treatment time, the entire picture should improve rapidly.

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PROPHYLAXIS for OPTHALMIA NEONATORUM

A Survey of Practices in Idaho

WOODROW W. BENSON, M.P.H.

BERNICE J. FOLTZ and FREDERICK O. GRAEBER, M.D.

Boise, Idaho

A state regulation adopted in 1952 has had little effect on the choice of agents used in prevention of the disease.*

AS early as 1911 Henry Copley Greene, referring to ophthalmia neonatorum, stated: "The disease and its prevention have been discussed almost *ad nauseam*."¹ A study of the literature indicates that this discussion has continued unabated since Greene's day. The authors of this paper hope to contribute to the discussion of the disease without adding to the nausea.

In spite of Cr  d  's dramatic demonstration in 1881 of the effectiveness of silver nitrate as a prophylactic agent in the prevention of ophthalmia neonatorum,² the routine use of this procedure was not immediately accepted by all physicians. As a consequence much of the early American discussion concerned itself with enforcement of the use of a germicide and with the reporting of the disease. A study made in Massachusetts in 1909, for example, revealed that of 5,949 deliveries 42 per cent had been attended by physicians who never used a recognized preventive.¹ That the disease was then still occurring to an appreciable degree is indicated in a 1910 release from the Boston Board of Health which reported an incidence of over 100 cases

per month after a campaign was instituted to prosecute physicians who failed to report such cases.

Legislative Action

Because routine use of a prophylactic agent was not unanimously adopted, many states tried to solve the problem by legislative action. Whether these various state laws were responsible or not, the United States then entered a period in which prophylaxis was generally used routinely and discussion concerning the disease revolved about the choice of germicidal agent. Of 116 obstetrical clinics surveyed in the United States in 1930, 78 per cent were using silver nitrate, 18 per cent were using argyrol, 3 per cent were using mercurochrome, and 1 per cent were using cargentos.³ This survey was made as a result of the White House Conference on Child Health and Protection called by President Herbert Hoover.

New Agents

With the introduction of antibiotics, discussion changed to a comparison of the older prophylactic agents with the new. The most recent development has been the appearance in scientific literature of reports on the use of an intramuscular injection of not less

* From the Idaho State Board of Health, Division of Public Health.

TABLE I
Number of Births, by Prophylactic Used, Idaho
1950-1954

	1950	1951	1952	1953	1954
TOTAL BIRTHS.....	15,666	16,182	16,402	16,499	16,747
Silver Nitrate.....	11,072	9,036	4,180	3,594	3,001
Penicillin.....	2,903	6,223	11,942	12,681	12,161
Argyrol.....	1,048	538	50	35	40
Neo Silvol.....	398	187	30	32	0
Terramycin.....	0	0	0	16	1,254
Water.....	1	0	0	1	2*
Mercurochrome.....	0	0	1	0	0
Aureomycin.....	0	0	0	0	36
Neomycin.....	0	0	0	0	22
Chloromycetin.....	0	0	0	0	9
Sulfathiazole 5%.....	0	0	0	0	8
Merthiolate.....	0	0	0	0	1
Bacitracin.....	0	0	0	0	1
Agno ₃ and Terramycin	0	0	0	0	1
Not Stated.....	244	198	199	138	211

* These two infants were born to parents who belong to a religious sect that does not believe in medications or medical care.

than 50,000 units of penicillin.⁴ This procedure has been questioned because there have been unexplained deaths following intramuscular injection.⁵ A recent paper questions the value of the routine use of a prophylactic agent in a day when gonococcal infections have become relatively infrequent and when treatment in the mother is so effective.⁶ This suggestion of discontinuance of routine prophylaxis would seem to complete a cycle of discussion started by Credé's discovery.

Practices in Idaho

This study was stimulated by a request from the National Society for the Prevention of Blindness for information concerning present prophylactic practice in Idaho as influenced by a regulation adopted in 1952. When the State Legislature created a Board of Health in 1908 it also passed a regulation which made mandatory the

reporting of gonorrheal ophthalmia. In 1921 a state law was passed requiring the instillation of an accepted germicide, but leaving the decision as to the naming of the germicide to the State Department of Public Welfare. As far as can be determined this department failed to act on the law. It apparently was assumed that only silver nitrate could be used.

During the year 1952, a few physicians in the state began questioning the legality of using penicillin under the existing law. To clarify this matter a series of meetings was held with the Public Health Advisory Committee of the State Medical Association. As a result the Department of Public Health in August of 1952 adopted a regulation that accepted as the only germicides of proven efficiency a one per cent solution of silver nitrate in wax ampules, and penicillin ophthalmic ointment, 100,000 units per gram.

Effect of Regulation

A study of Table I indicates that this regulation had little effect on germicides used. Two years before its passage (1950) almost 20 per cent of all children were already receiving penicillin as a prophylactic agent. In the year preceding its adoption (1951) almost 40 per cent received penicillin prophylaxis; and in the year of adoption (1952) almost 72 per cent received penicillin. In 1953, the year following the adoption of the regulation, the change in prophylactic agents used was negligible. In the five-year period of study, the use of silver nitrate decreased from 11,072 in 15,666 births to 3,001 in 16,747 births—a drop from 70 per cent to 18. During the same period the use of penicillin increased from 18 per cent to 72.

In 1954, two years after the adoption of the regulation, many other agents, mostly antibiotics, made their appearance in the total list of prophylactic materials used. Almost three times as many different prophylactic agents were used in 1954 as in 1951. This indicates that discussion of prophylaxis will continue as new drugs are developed. The National Society for the Prevention of Blindness, in its most recent publication on the sub-

ject, reaffirms its acceptance of silver nitrate solution as the preferred prophylactic agent and makes this statement: "Properly equipped research centers should be permitted to investigate the possible efficacy of various antibiotics in the prophylaxis of ophthalmia neonatorum."⁸

Differences in Hospitals

A study was made in 18 representative hospitals having over 200 births a year to determine variation in prophylactic practice in 1954. Hospitals from every geographic section were included so that the entire state would be represented. In the 10,465 deliveries in these 18 hospitals, silver nitrate was used in 16.1 per cent and penicillin in 71.9 per cent. Only three used a single prophylactic agent; one using silver nitrate, and the other two using penicillin. One used terramycin almost exclusively. It may be pertinent to mention that in Idaho 98 per cent of all births in 1954 occurred in hospitals. Of special interest were two located in the same town. In one of these penicillin was used almost to the exclusion of any other agent while in the other about 50 per cent penicillin and 50 per cent terramycin were used; this in spite of the fact that both

TABLE II
Reported Cases of Ophthalmia Neonatorum
1950-1954

Case	Date Reported	Sex	Race	Age at Diagnosis	Prophylaxis Used*
1	July 1952	male	Indian	2 weeks	1% Silver Nitrate
2	Dec. 1952	female	White	10 days	Penicillin Eye Ointment
3	Apr. 1953	female	Mexican	18 days	?
4	Oct. 1953	female	White	5 days	Penicillin Ointment
5	Oct. 1954	male	Mexican	6 days	Penicillin Ointment 1:1000

* From Birth Certificate.

hospitals had almost the same medical staff.

Five Cases Reported

During the period of study (1950-1954) five cases of ophthalmia neonatorum were reported to the State Board of Health. Table II gives some pertinent data concerning these cases. Of interest is the fact that two occurred in Mexican children and a third in an Indian child in a state which has a relatively small population of these races. Little is known of case No. 3. The other four children were all born in a hospital. It cannot be assumed that these four cases, where the prophylactic agent used was known, represent failures of that agent. If it is assumed that these do represent failures, then these failures would be in the ratio of one silver nitrate to three penicillin during years in which the use of these two prophylactic agents over the entire state was in the ratio of 1. to 3.6.

SUMMARY

State law or regulation has little effect on prophylactic agents used in the prevention of ophthalmia neonatorum.

Physicians in Idaho are not in agreement as to the prophylactic of choice against ophthalmia neonatorum.

The choice of a prophylactic agent seems to be determined on a hospital staff basis rather than by the individual physician.

Ophthalmia neonatorum is still occurring in Idaho.

CONCLUSION

The whole question of prophylaxis against ophthalmia neonatorum should be re-evaluated.

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UVEITIS STUDY

A three-year study of the causes and treatment of uveitis will be made at the Wills Eye Hospital, Philadelphia, under the guidance of Irving H. Leopold, M.D., research director at the hospital. The work has been financed by a grant of \$127,900 from the John A. Hartford Foundation.

SCARED INTO SAFETY

Finding that some workers were careless about wearing their goggles, the safety supervisor of the New York Central car shops in Albany used a gruesome device, a glass eye realistically "bleeding" from a flying piece of metal. Whenever he found an employee minus his goggles, he led him to the horribly damaged eye. Ocular injuries decreased sharply in the car shops.

The Sight-Saving Review

SURVEY OF AUSTRALASIA

Striking facts reported by Dr. Ida Mann indicate that many eye troubles may be a product of civilization.

THE amazing freedom of aborigines from many common eye diseases was one discovery of the ophthalmic surveys recently made in Australasia. In her presidential address before the Ophthalmological Society of Australia in October 1955 Dr. Ida Mann described the results of the study, then three-fourths completed. Her report, here summarized, was printed in the *Society Transactions*, Volume 15, 1955.

Before the last world war the prevention of blindness committee of the Society urged regional surveys as the basis for its work, and four studies were finally launched with government cooperation covering a tremendous area from southwest Australia up through the Admiralty Islands. A great variety of races, climates and living conditions was included, and 18,337 persons were examined, the greater proportion of them full-blood natives. In the Territory of New Guinea there were 13,286 subjects, almost all natives; in the Kimberley region of West Australia 2,866, and in the eastern goldfields 2,203. The uncompleted part of the survey will cover some of the eastern states of Australia.

Citizens of the western world might conclude that many eye troubles are a product of civilization when they read some of the striking facts brought out by Dr. Mann. Completely absent over the whole area were sympathetic ophthalmia, ocular malignant neo-

plasms and iridocyclitis, and no authenticated case of ophthalmia neonatorum was found. Among the natives there was an extremely low incidence of glaucoma, senile cataract, strabismus, styes, chronic marginal blepharitis and color blindness.

In New Guinea and Kimberley the chief cause of monocular blindness was injury, usually in fighting. The former region showed 252 cases of traumatic blindness in one eye, with senile cataract a poor second with 32 cases. In the Kimberley region 68 persons had been blinded in one eye by injury; 18 subjects, mostly white children, had amblyopia ex anopsia from squint; and 17 had lost the sight of one eye from trachoma. About the same proportions of blinding causes were found in the eastern goldfields. Binocular blindness had an incidence of 0.73 in New Guinea, with the chief causes senile cataract, after-effects of injuries, and trachoma. Trachoma was the chief cause of binocular blindness in Kimberley and the goldfields, with a blindness incidence of 5.19 and 1.27 respectively.

The complete absence of sympathetic ophthalmia was stressed by Dr. Mann as remarkable in 367 blinding injuries to the eye, most of them severe perforating trauma from arrow wounds, which had received no medical treatment. Many more cases were observed of similar wounds which had healed with minute thread-like anterior

synechia and retention of excellent vision. Since sympathetic ophthalmia is rare even among white Australians, she pointed out, it may be related to an unknown infecting agent "not present in this hemisphere."

While the incidence of glaucoma among white Australians may prove to run as high as 5 per cent, it was 0.01 in New Guinea, and among the whole 18,337 persons surveyed only 10 cases were found, several of them Europeans. Dr. Mann speculated on the possibility that aside from the possible influence of heredity, the very low-salt and high-potassium diet of the natives may protect them from glaucoma. Arteriosclerosis and vascular hypertension are evidently very uncommon among the New Guinea natives. Senile cataract has only a third of the incidence in New Guinea and Papua of that in Kimberley, where it was 3.34 per cent of all eye diseases among whites and natives. Strabismus was four times as common among the whites as among the aborigines. Color blindness had a 7.3 per cent incidence among white males in Australasia, and 1.9 per cent among native males.

An interesting result of the surveys was proof that trachoma was introduced into this part of the world during the eighteenth and nineteenth centuries, and that it was severe among natives in proportion to the length of their contact with Europeans. In New Guinea, where the contact is just beginning, it is far less widespread than among natives who have associated with whites for several generations.

The high incidence of trachoma revealed by the survey was unexpected; it takes a mild form and is often not reported. This disease and the purulent

ophthalmia which often precedes it will be fought by the health authorities with the cooperation of the Expert Committee on Trachoma of the World Health Organization.

Another problem emphasized by Dr. Mann was the lack of ophthalmic services in the "outback" of West Australia, called "the land of sin, sand, sorrow and sore eyes."

18TH INTERNATIONAL CONGRESS OF OPHTHALMOLOGY

All ophthalmologists are invited to attend the 18th International Ophthalmological Congress in Brussels, September 8-12, 1958. During that year the great Universal International Exhibition will be held in Belgium.

Professor Léon Coppez of Brussels has been named president of the Congress. The main subjects chosen for discussion are:

Orthoptic treatment of concomitant strabismus. Presented by A. Bangerter, St. Gallen; T. K. Lyle, London; and J. Malbran, Buenos Aires.

Geriatrics in ophthalmology. Presented by M. Buerger, Leipzig; J. Francois, Ghent; G. Jayle, Marseille; and M. Jayle, Paris.

There will be symposia on cataract, radioisotopes in ophthalmology, electoretinography and glaucoma.

The International Association for the Prevention of Blindness and the International Organization Against Trachoma will hold meetings during the Congress. All correspondence regarding the meeting should be addressed to the General Secretary, Professor Jules Francois, 15, place de Smet de Naeyer, Gand, Belgium.

Schoenberg Memorial Lectures

THE tenth annual Schoenberg Memorial program of the New York Society of Clinical Ophthalmology and the National Society for the Prevention of Blindness was presented at the New York Academy of Medicine on December 10, 1956.

Dr. Irving H. Leopold, chairman of the department of ophthalmology, University of Pennsylvania Graduate School of Medicine, addressed the meeting on "Recent Advances in Medical Therapy of Glaucoma." Another aspect of this disease, "The Problem of Glaucoma in Myopia," was discussed by Dr. Hans Goldmann of the University of Berne, Switzerland.

The approach to the medical therapy of glaucoma in the past as in the present, said Dr. Leopold, has been to utilize measures which lower intraocular pressure. No serious attention has been directed toward making the tissues better able to withstand the elevated pressure.

The basic medical treatment of the disease really began with the use of eserine and pilocarpine. Several investigators have studied the action of the extract of the calabar bean. Christison was the first. His pupil, Fraser, was the first to note its ocular effects. This was one of the drugs used by native African tribes for their trials by ordeal. Argyll Robertson also studied this agent and demonstrated an antagonism between eserine and atropine, but Laquerer was the first to employ eserine for the therapy in glaucoma in 1875. Pilocarpine was introduced for this purpose by Weber in 1877. Since that time these two

drugs have been the mainstays of medical antiglaucomatous therapy.

Dr. Leopold pointed out certain disadvantages of these miotics which have become apparent during the years of their constant use and study. They sometimes produce headache, ciliary spasm and false myopia; patients may become hypersensitive to them; their action is usually of short duration, which necessitates very frequent instillations. The ideal miotic, Dr. Leopold said, would be one that had none of these adverse effects, and a greater length of action. He described the various drugs that have been tested in the search for such an agent, and compared their effectiveness. He emphasized that it is well for the ophthalmologist to have available many different miotics, since each can serve a specific purpose at the desired time.

Because of the profound influence of emotion on intraocular pressure, as stressed many years ago by Schoenberg, interest has been shown in the potential role of the so-called tranquilizing agents in glaucoma. Chlorpromazine, reserpine, phenergan and phenobarbital have been used with some success by certain investigators. Another avenue of current exploration is the action of a variety of hormones.

Dr. Leopold reported general agreement as to the great value of diamox for treatment of acute glaucoma, and its limited usefulness for chronic glaucoma because of side effects such as anorexia, weight loss and general fatigue. The mechanism of the action of diamox is not yet understood and investigations are continuing.

In view of the many new agents for control of intraocular pressure that have been introduced during the last decade the problem may now be approached locally and/or systemically. Local therapy is still of greatest importance, but more attention is being given to systemic agents.

Dr. Goldmann stated that older people with high myopia often have glaucoma without any of its symptoms. This form often goes unrecognized, though it is not rare. To aid in the diagnosis of glaucoma in patients with high myopia, Dr. Goldmann

recommended use of a special instrument, the applanation tonometer, which permits more precise measurement of intraocular pressure than the standard tonometer. Recognizing cases of glaucoma in such patients, he said, is of outstanding importance.

The Schoenberg lectures are presented annually in memory of Dr. Mark J. Schoenberg, distinguished ophthalmologist, who died in 1946. He was a founder and first president of the New York Society for Clinical Ophthalmology, and first chairman of the Committee on Glaucoma of NSPB.

WONDERS OF VISION

New discoveries in the phenomena of vision were reported by ophthalmologists and other scientists at a symposium on "Light, Seeing and Living" held by the Illuminating Engineering Research Institute at Cornell University, Ithaca, N. Y., in September 1956.

Dr. Warren S. McCulloch of the electronic research laboratory, Massachusetts Institute of Technology, described experiments showing that the human and animal eye can initiate reflex responses to sudden stimuli before the brain is alerted. Frogs, for instance, invariably snapped at a moving fly before the ocular message reached the brain. Electrodes were placed in various areas of the frog's brain and measured electronically in milliseconds the time elapsing between the frog's attack on the moving fly and the electrical impulses created when the knowledge of the fly's presence reached the brain.

In investigating optimum brightness conditions for seeing, Dr. McCulloch reported that animals and human beings are forced to orient

their entire bodies in order to focus attention on a brightly lighted object. A subject seated between two alternately flashing lamps set 10 feet apart developed a severe headache within ten minutes.

A similar observation was made by Dr. Glenn A. Fry, director of the School of Optometry, Ohio State University. He found that a given object or task near a glaring light actually appears less bright than when the glare source is removed. Scatter light from the glare source falls over the area in the retina which is receiving the image and veils it. Dr. Jack M. Fugate, a professor at the same school, established that the sense of discomfort from glare was caused by muscular contraction of the pupillary opening.

Dr. Leonard C. Mead of the Institute of Applied Experimental Psychology at Tufts College, Medford, Massachusetts, has measured the electrical current in the muscles over the eyebrows to determine the amount of effort required in seeing and observe

the muscular tension created by this effort. With Dr. Richard Blackwell, director of the Vision Research Laboratories of the University of Michigan, Ann Arbor, he is developing an Alertness Indicator, which records muscle tension in the wearer and warns him when the tension has reached a low level. The indicator has been tested on drivers of trucks and ordinary automobiles, radar operators and others who require continual alertness in their work. It will further be used to determine the optimum illumination for good seeing and performance.

GENERAL PRACTITIONER'S ROLE

"Prevention of Blindness and the General Practitioner" was one of the subjects presented at the Clinical Meeting of the American Medical Association held in Seattle last November. Two well-known ophthalmologists, Andrew de Roethth of Spokane and Purman Dorman of Seattle, discussed research in the blinding eye diseases and progress in treatment.

It was emphasized that the doctor in general practice will benefit from a periodic review of this field. The new antibacterial drugs have drastically reduced the number of persons blind as a result of infection, but at the same time indiscriminate use of the corticosteroids has been decried because of the danger of herpetic corneal infections. Safety measures and constant vigilance are necessary to prevent blindness from trauma. Because of the increased life expectancy senile degenerative changes provide ever-increasing food for thought.

Blindness takes the largest toll at the two ends of the life span. In the

first years there are causes due to heredity, and damage is done to the developing fetus. In later life there are systemic diseases and degeneration of the aging eyes. Retrolental fibroplasia as a cause of blindness—one which must be paid for in many years of suffering as well as exacting a heavy financial toll from a generation yet to come—had a spectacular rise and an equally dramatic decline when the cause and prevention were discovered within 12 years.

Dr. de Roethth and Dr. Dorman made the following suggestions to general practitioners as a means of reducing further the incidence of blindness: interest in hereditary eye diseases; warning to expectant mothers of the danger of stress; careful application of oxygen for the premature; judicious use of antibiotics; early detection of glaucoma by tonometry in the routine physical check-up; indication of cataract operation before economic blindness sets in; and strict control of diabetes.

PROCTOR MEDAL TO DR. ASHTON

The Proctor Medal has been awarded to Dr. Norman Ashton, director of pathology at the Institute of Ophthalmology, London University, for his research in the pathogenesis of retrolental fibroplasia and other eye diseases. He is the first scientist outside of the United States to receive the award. The medal is a memorial to Dr. Francis I. Proctor, who left private practice in Boston to devote himself to eliminating trachoma in this country. The presentation will be made at a banquet in New York City next June given by the Association for Research in Ophthalmology, which each year awards the medal to an investigator who has made a basic contribution in the field.

VISION TEST FOR NEWBORN INFANTS

Research now under way may increase chances of preventing blindness through earlier treatment.

THE work of three Boston research scientists may some day enable medical men to measure more accurately the vision of newborn infants. This project, supported by the National Society for the Prevention of Blindness, aims to develop apparatus to indicate how well a baby sees and, through a series of screenings, establish infant visual acuity standards like the 20/20 fraction applied to older children and adults.

Currently conducting the investigation at Beth Israel Hospital and Massachusetts Eye and Ear Infirmary are Drs. John J. Gorman, David G. Cogan and Sydney S. Gellis of Harvard Medical School. Its major value will be to provide the physician with a definite clue as to an infant's need for more exhaustive eye examination and treatment.

Need for Such Test

Medical men now use various instruments to discover the physical condition of the infant eye in terms of possible organic damage. But a thorough examination is time-consuming, requires use of anesthesia and offers only inconclusive evidence as to visual acuity of a young baby.

The principal difference between an eye examination of a newborn and of an older child or an adult is the degree of cooperation a physician may expect. The device now being developed will test the infant's response—through

movement and fixation of the eyes—to visual stimuli “he would not be able to escape.” The test will take only a few minutes, and will not require the baby's cooperation.

Early Treatment Important

The National Society, along with most eye specialists, believes that earlier treatment of vision defects—preferably in infancy and early childhood—could substantially reduce unnecessary loss of sight. It estimates that at least one out of four of the nation's school-age youngsters—eight million of them—now needs eye care.

Early in their work the Boston investigators constructed a cylinder two feet in diameter and two feet deep into which an infant could be placed in a hammock. The inside of the cylinder was marked with black and white stripes of varying thickness, simulating the widths of figures on the standard Snellen or E chart used to test vision in older persons. The cylinder was then rotated around the child by means of a small motor and rheostat speed control.

Visual responses to the stripes were correlated. Of 60 newborns tested—age eight days to four months—only four failed to respond. One of these was known to be blind; another was suspected of being blind.

Next the researchers made a portable device which could be set up in clinic nurseries. This apparatus—a



Photo courtesy of Newsweek

The device, now being developed, which is designed to test an infant's response to visual stimuli is used on a subject 36 hours old

nine-inch-wide, 16-foot-long strip of striped paper reeled before an infant's eyes on two spools—has been used on 100 newborns ranging in age from one hour and twenty minutes to five days.

According to the investigators these tests, most of which took from two to three minutes each, showed that the vision of 93 of the 100 infants had developed sufficiently to bring response. These infants had visual acuities of less than 20/200—the legal definition of blindness in the United States. This fraction means that an object seen by the normal eye at 200 feet would be seen only at 20 feet by the 20/200 eye.

Eventually the Boston doctors hope to test enough newborns to provide a basis for a definite correlation between infants' vision and standards generally applied to vision of older persons.

NSPB Research Grants

The Boston project is one of ten currently being supported by the National Society for the Prevention of Blindness under grants totaling \$26,500. The nine other awards are:

New York Eye and Ear Infirmary, \$2,000; electrophysiology of the eye.

University of Nebraska Medical School, Omaha, \$4,000; adrenocorticoid function in relation to diabetic retinitis.

Wills Eye Hospital, Philadelphia, \$3,250; choroidal circulation.

New York University-Bellevue Post Graduate Medical School, \$2,000; pancreatic dornase in inflammatory ocular exudates.

Washington University School of Medicine, St. Louis, \$3,000; photo-coagulation of the retina.

Albert Einstein College of Medicine, New York, \$1,250; fields of vision studies.

Medical College of Georgia, Augusta, \$2,000; bacteriology of uveitis.

University of Chicago, department of pharmacology, \$2,500; synthesis of Carbon-14 and Sulphur-35 radioactively labelled Diamox.

Arnall Patz, M.D., Johns Hopkins University, Baltimore, \$5,000; retrolental fibroplasia.

The National Society's grant for continuing studies in retrolental fibroplasia is part of a \$15,000 fund established in 1953 by the E. Matilda Ziegler Foundation.

Joint Conference of NSPB and Pan American Association of Ophthalmology

The 1957 Joint Conference of the National Society for the Prevention of Blindness and the Pan American Association of Ophthalmology will open with a luncheon on Sunday, April 7, at the Hotel Statler, New York, and will extend through April 10.

Mayor Robert F. Wagner will deliver a welcoming address at the luncheon; other speakers will be Mason H. Bigelow, National Society president; Frank B. Berry, M.D., assistant secretary of defense for medical affairs; Major General Dan C. Ogle, surgeon general, U. S. Air Force; William L. Benedict, M.D., executive-secretary, American Acad-

emy of Ophthalmology and Otolaryngology, and Moacyr E. Alvaro, M.D., executive director, Pan American Association of Ophthalmology. Dr. Brittain F. Payne of New York, president of the Congress, will preside.

The annual award of the Leslie Dana Medal for outstanding service in prevention of blindness will be made on this occasion.

The scientific program of the Pan American Congress will be presented in the mornings, and will include three symposia on official themes, with moderators as follows:

Monday, April 8. Diseases of the ocular fundus. Dr. George N. Wise, New York

Tuesday, April 9. Ophthalmic surgery. Dr. John H. Dunnington, New York

Wednesday, April 10. Therapeutics in present-day ophthalmology. Dr. Irving H. Leopold, Philadelphia

Film showings, exhibits and clinics are also scheduled for the eye specialists during the four-day meeting.

The National Society will hold its sessions in the afternoons, under the following general subjects:

Monday, April 8. Building a Community Program for Prevention of Blindness

Tuesday, April 9. Children's Eye Problems

Wednesday, April 10. Glaucoma Detection Programs; also Education of the Partially Seeing Child

Registration will start Sunday, April 7, at 10 A.M. in the Skytop of the Statler. Reservations should be made directly with the hotel.

SCHOLARSHIP AVAILABLE

The Elbyrne G. Gill Eye and Ear Foundation, 711 S. Jefferson St., Roanoke, Va., is offering a scholarship for \$100 for training in teaching the blind. The course will be given this summer at Syracuse University.

Recommended Standards for Glaucoma Clinics

STARTING in October 1950 the National Society has sponsored meetings of ophthalmologists interested in the operation of glaucoma clinics. These meetings have usually been held just before the annual meeting of the American Academy of Ophthalmology and Otolaryngology. At these informal sessions the feeling developed that there was need for agreeing on certain minimum requirements which should be recommended for the early detection and early diagnosis of glaucoma. Subcommittees were appointed which considered various aspects of the problem; their reports were discussed in 1953 and 1954 at the general meetings and later at meetings of the National Society's Glaucoma Committee.

The minimum requirements recommended for early detection of glaucoma were:

1. History
 - a. Symptoms which pertain to glaucoma.
 - b. Family history to determine possible hereditary factor.
2. Visual acuity of each eye after refraction.
3. External appearance—slit lamp microscopy; size and appearance of cornea (e.g., bedewing); appearance and depth of anterior chamber; iris appearance; size and reaction of pupils.
4. Internal examination—opacities and possible swelling of lens; study of disk; blood vessels.
5. Tonometry—this could well include tonography and phasing; difference in pressure between the two eyes.

6. Gonioscopy should be done even though usually negative in chronic simple glaucoma.
7. Field studies.
8. Provocative tests.

There was also agreement about standards to be recommended in testing fields with a tangent screen. These recommendations were:

1. Test be made at one meter's distance.
2. Two millimeter test object, round and white, possibly with a disappearing feature—as a starting point.
3. Tangent screen of black, dull material at least one meter square. Background should be as harmonious with screen as possible.
4. Illumination: Seven footcandles recommended with a range of 5-15 footcandles considered satisfactory, with indication of the size bulb and distance from screen which produces this amount of light.
5. Black sleeve and black wand as part of equipment.
6. Test object to be moved from blind to seeing area with no waving motions.
7. Refraction: Field should be done with glasses if patient's vision is poor and glasses improve it sufficiently. This fact should be noted on the chart.
8. Items to be recorded: Illumination, size of test object, color and whether with or without glasses.

Other factors such as color fields, fluorescent light, black light and flicker fusion were discussed, but there was agreement that the standard recommendations as indicated above

should call for equipment which can be obtained easily at minimum cost. The purpose of the standard is to serve as a common denominator, not to change any practices now followed. It was recognized that from time to time these recommendations may need to be amplified or modified.

The members of the National Society's Committee on Glaucoma at the present time include Willis S. Knighton, M.D., *chairman*; Francis

Heed Adler, M.D., Bernard Becker, M.D., Frederick C. Cordes, M.D., Arthur Gerard DeVoe, M.D., John H. Dunnington, M.D., Edwin B. Dunphy, M.D., F. Bruce Fralick, M.D., James N. Greear, Jr., M.D., George M. Haik, M.D., Peter C. Kronfeld, M.D., Jay G. Linn, M.D., A. E. Maumenee, M.D., Robert N. Shaffer, M.D., Kenneth C. Swan, M.D., and Georgiana Dvorak Theobald, M.D.

New Attack on Hoxsey

For the second time a Federal court has determined that the Hoxsey medicines for internal cancer are worthless. On November 15, 1956, after a six-week trial in the Federal court at Pittsburgh, the jury returned a verdict that these medicines, in pill form, were illegally offered as an effective treatment for cancer. On November 16, U. S. District Judge John L. Miller signed an order of condemnation stating that the pills were misbranded as charged by the Government and ordering their destruction.

Unfortunately this action does not end the menace of this fake treatment. It merely means that half a million of the Hoxsey pills, which were seized shortly after the opening of a second Hoxsey Clinic at Portage, Pa., will now be destroyed. An injunction is being sought to stop further interstate shipment of the pills.

George P. Larrick, U. S. Commission of Food and Drugs, urges cancer patients and their families who may be planning to try the Hoxsey treatment either at Dallas, Texas, or Portage, Pa., to acquaint themselves with the facts about it. All such persons are advised to secure a copy of the

Public Warning which was issued last April. They may do this by writing to the Food and Drug Administration, Washington 25, D. C.

Harry M. Hoxsey has continued to promote his worthless cure for more than 30 years, notwithstanding numerous local and state court actions. Thousands of persons have been deceived by the false claims for the Hoxsey liquid medicines and pills. At the Pittsburgh trial there was testimony concerning persons who may have died of cancer as a result of reliance on the Hoxsey treatment instead of seeking competent medical treatment in the early stages of their condition. The Government's evidence showed that alleged "cured cases" presented by defense attorneys were people who either did not have cancer, or who were adequately treated before they went to the Hoxsey clinic, or who died of cancer after they had been treated there.

Late in January the Federal Government renewed its drive against Hoxsey by mailing 46,000 posters describing the treatment as worthless.

The posters will be displayed in post offices throughout the U. S.

Visual Standards for Drivers

A SYMPOSIUM on Medical Aspects of Motor Vehicle Accident Prevention was held under the auspices of New York University on May 23, 1956, with the cooperation of the New York Academy of Medicine and the New York State Industrial Medical Society.

Members of the Committee on Visual Standards which was formed as part of the meeting include Conrad Berens, M.D., New York, *chairman*; J. Gordon Cole, M.D., New York; P. N. DeVere, O.D., American Optometric Association; Hedwig S. Kuhn, M.D., Hammond, Ind.; Brittain F. Payne, M.D., New York; A. Russell Sherman, M.D., Newark, N. J.; Byron Smith, M.D., New York; Lester H. Sugarman, O.D., American Optometric Association; and George N. Wise, M.D., New York.

The committee drew up recommendations for drivers of public and commercial vehicles, and separate recommendations for minimal requirements for private automobile operators. Recommended requirements for the latter were:

A correctible visual acuity to 20/40 in the better eye.

Form field of 70 degrees in the horizontal meridian in each eye or 140 degrees in the horizontal meridian in one eye.

Re-examination of eyes every three years.

The committee made no specific recommendations in regard to color vision, stereopsis and light sense, because of lack of uniformly acceptable tests. The committee felt that persons involved in serious accidents should

have more extensive medical examinations under qualified examiners to evaluate their fitness to continue to drive.

The committee recommended that licenses of all individuals receiving aid for the blind be revoked. Undoubtedly this recommendation grew out of the fact that there have been newspaper reports from many sections of the United States that persons legally blind and receiving public assistance for the blind have been found to be driving automobiles, which has been possible because of the failure of state laws to require re-examination of vision once the initial driver's license has been obtained.

A report of the symposium on Medical Aspects of Motor Vehicle Accident Prevention appears in the *New York State Journal of Medicine*, December 15, 1956. (Committee on Visual Standards, p. 3865.)

RESIN LENSES

Children, athletes and persons with special optical problems enjoy the new lenses made of a hard resin, according to an article by Margarite L. McNally in a recent issue of *Today's Health*. Perfected by a research team, this plastic is said to have several times the resistance of safety glass to heat and high velocity impacts. It looks exactly like glass but weighs half as much, a factor important to persons wearing cataract spectacles. In eye-hazardous work like sandblasting, welding and grinding it is reported to offer maximum protection. While resin lenses cost more than glass, they withstand fogging better in sudden changes of temperature, and are more scratch-resistant than ordinary plastic lenses.

PREPARING TEACHERS OF THE PARTIALLY SEEING

FRANCES PARTRIDGE CONNOR

Teachers College, Columbia University

In addition to the general background and knowledge required of all educators, those who plan to work in this field need highly specialized training in the physical, psychological and educational areas, including supervised laboratory experiences.*

PREPARING teachers to work with children requires a continuous on-going program, initiated years prior to the candidate's appearance at the college admissions office and extending far beyond the granting of an academic degree. If competent young men and women are to become interested in educating children who are partially seeing, the responsibility of recruitment and early teacher education should not be limited to college and university personnel. All educators, and community members as well, should be aware of their roles in teacher education. Nor should teacher education be limited to academic courses and classroom experiences. Teachers are people; they need social as well as professional competence.

Building Attitudes

Probably the most important aspect of teacher education prior to the college years is the building of attitudes in young children. Present teachers exert direct and indirect influence on

their pupils. How do the elementary and secondary teachers of the local community feel about themselves? How do they represent themselves and their positions to others at home, in the neighborhood stores, at the bridge table or tea parties? Prestige will depend not only on what children and parents think of the teaching profession, but what they think of individual teachers. A teacher's posture, dress, activities and reactions to people young and old will certainly affect his community's regard for him.

The individual teacher's position in the community, his participation in local activities and his ability to work with out-of-school citizens will affect the community's attitude toward all teachers. It has been said that every teacher is basically a public relations person of the school district. One might ask if the local doctor hopes his son or daughter will become a teacher. The response will depend, to some extent, on the community's feelings about its educators. Children, in turn, will tend to absorb the attitudes of their family and neighbors, and especially will absorb at an early age the attitudes of their elementary teachers.

* Presented at the Workshop on the Partially Seeing, Convention of the International Council for Exceptional Children, Minneapolis, Minnesota; April 1956.

Portrayal of teachers in movies and novels also has bearing upon prestige. Elsbree and Reutter¹ have emphasized the urgency of changing the unattractive stereotype in a concerted effort for teacher recruitment.

Stimulating Interest

Some community schools have taken positive steps to introduce boys and girls to work with children. Organizations such as the Future Teachers of America (a club composed of high school boys and girls with a faculty sponsor) have become active in stimulating interest in teaching as a career. Even in high school, children can learn more about work with exceptional children through such projects as visits to teachers colleges; assisting teachers of young children; conducting forums on special education in assembly programs; studying material on the teaching profession; and sponsoring socials in connection with similar groups from other schools. Boards of education and other community groups might well be encouraged to give financial support to such organizations of students. Should not promising young students be introduced to programs of sight conservation in school?

College Preparation

Tradition places the major responsibility in teacher preparation on the colleges and universities. Here efforts are made to fortify the prospective teacher with a background of liberal arts, mental hygiene and child study as well as provide him with knowledge and skill in teaching methods and the use of educational materials. In addition to the training required of all teachers, prospective teachers of the partially seeing are

provided with a highly specialized preparation in the physical, psychological and educational aspects of working with the visually handicapped. This rich program is balanced with supervised laboratory experiences.

The work of college personnel extends beyond the campus into the local schools, an in-service teacher education function. Not only are licensed teachers registered for graduate courses and for advanced academic degrees, but teacher education staffs often provide consultant services for local workshops and participate in other in-service projects. This is an important contribution to the professional growth of key leadership personnel, and to the improvement of methods of teaching partially seeing children.

Role of School Staff

State and local administrative and supervisory personnel perform major roles in teacher preparation. They help the new teacher bridge the gap from student life to the role of professional educator; they assist the more seasoned teacher in meeting new problems; and they stimulate staff members by pointing out the challenges and vital aspects of a creative occupation. One of the principal responsibilities of school leadership personnel is the continuous professional growth of the entire faculty through such activities as staff meetings, workshops, conferences, intervisitations, and opportunities for informal get-togethers.

Whether the teacher works with exceptional children at home, in a special school or hospital, in a uniquely designed or equipped classroom or in a regular classroom, he must be con-

sidered as an individual with multitudinous interests, talents and abilities. He will need help in functioning as a *person*, as a *professional worker* and as a *community member*. Teacher-preparing institutions are still searching for adequate means of screening prospective students and for assuring their effectiveness as teachers. At any rate, special efforts are being made to assist teachers of children who are partially seeing to fulfill their three major roles.

The Teacher as a Person

Each prospective teacher brings with him to the classroom a background of culture which he has obtained through such activities as reading, travel, family patterns, art, music, religion and basic social heritage. Careful consideration must be given to his understanding and appreciation of cultures other than his own, especially when his teaching assignment requires working with children of diverse socio-economic standards. Although no one mold should be provided for teachers, effort exerted toward helping prospective educators comfortably to make use of social amenities in our society is worth while.

No adequate device for measuring interest in people, particularly exceptional children, has as yet been devised². Although basic enthusiasm in working with children who are partially seeing is essential to a job well done, the teacher motivated by maudlin sympathy has no place in special education. Several recent efforts have pointed to directions for exploration of teachers' personal motivations and satisfactions. Arthur Jersild³ has presented some startling insights and has raised questions re-

garding the teacher's self-concept and mental health, with emphasis on anxiety, loneliness, sex, hostility and compassion. His statement, "For a teacher to know those whom he teaches and their anxieties, he must know himself and seek to face his own anxieties,"⁴ is quite provocative. Important too is ability to experience with children their successes and failures while offering support and assistance in growing up.

Screening Process

The importance of a selective screening process has long been recognized by colleges and universities. An approach used at the University of Florida⁵ emphasizes effective remedial programs for the improvement of a candidate's physical, personality and social qualities. Others too are paying attention to dress and grooming, speech production, attitude toward people and the effect of the candidate upon others. Emotional stability, tact, poise, forcefulness and sense of humor are all being considered.

While still attending college prospective teachers are assisted in developing talents and aptitudes useful in their work with children. Teachers of the partially seeing will need a wide variety of interests and skills.⁶ Use of creativity and ingenuity will in large measure correlate positively with the effectiveness of the teacher. The recent National Conference of the Association for Supervision and Curriculum Development had as its theme "Creative Thinking, Living and Teaching." If general educators feel creativity so important, how much more significant is it for work with multigrade classes of children with partial vision, or for the itinerant teacher.

Teachers of the partially seeing must be prepared to work cooperatively with others. How often have group work and committee activities in the college classroom been questioned as substitutes for the traditional lecture periods! Yet these same students, as teachers of exceptional children, will be required to communicate with medical staff members, psychologists, social workers and all the other professional personnel on the team. Experience in actual give and take—face to face situations will be direct preparation for work later on. Technical knowledges will have minimal value for the teacher unable to function as a cooperative educational leader in his classroom activities, in his association with parents and professional workers, or in his community endeavors.

Nor can the educators of teachers overlook their students' need for moral and spiritual maturity. More and more recognition is being given to the importance of an environment in which personal integrity is fostered and in which the individual is valued. Implications of resultant maturity are many in a program for children who are handicapped.

Understanding the Child

Probably the most important aspect of education is the communication of teacher and child. Prospective teachers usually need help in learning to know children. They need guidance in their observations and understandings of children as they work and play, eat and sleep. Sensitivity to timing in the learning process of the child and to the child's understanding of his environment is essential. Prospective teachers need the fun of helping children learn

and the thrill of watching a child realize his newly found skill or knowledge.

Emphasis should be given to the need for experience with a variety of children in many situations. Vital teaching opportunities are inherent in both formal and informal association with children. Without the pressures of a classroom environment, teacher candidates benefit from observing and participating with youngsters in the neighborhood playground, the swimming pool, at camp, in the Sunday school program, in hospital waiting rooms and wherever else they may be.

Since it is generally agreed that teachers of the visually handicapped should also hold a regular teaching certificate,⁷ student teaching with both non-exceptional children and those with visual handicaps is indicated. A teacher can hardly appreciate the learning processes and problems of the handicapped child unless he can apply the principles of learning in the more standard setting of the regular class. The teacher who spends a year or two in a third or fourth grade will tend to set appropriate goals for and appreciate the functioning of eight- and nine-year-olds. His attitudes toward the visually handicapped are likely to be more natural and realistic; he will know them as children with the same needs, desires and drives as all children. His goals may be more in keeping with the child's ability level. Differences within the group will be recognized as possible results of factors other than reduced visual acuity or eye defect. These too are children. Whether the sight conservation teacher is to be assigned to a special class or as an itinerant consultant, knowing children

through regular classroom teaching will be an asset to him. Such teaching should help prospective teachers of exceptional children to appreciate the complex job to be done in a crowded classroom. The difficulties of assimilating children with visual handicaps in this room can be better understood. Need for sensitivity to the problems of the regular classroom teacher and his situation, and the realities of the cooperative program are more apparent. As the special teacher in the school is respected, so will his handicapped charges be accepted.

The Teacher's Background

The body of technical knowledges, skills and abilities needed by the teacher of the partially seeing is great. In addition to that required by all teachers, this specialist will obtain a working knowledge of anatomy, physiology and hygiene of the eye. He will study the major causes and treatment of visual problems in order more fully to understand the necessary educational adjustments and be better prepared to participate on a team which is medically oriented.

The roles of the various professional workers and the resources of local, state and national groups must be familiar to this teacher. Knowledge of programs, methods and materials in the education of the partially seeing is essential, as is skill in applying this knowledge. Observation and participation in a variety of programs will be of particular value.

Increasing recognition is given to the multiple handicaps of children with partial vision. Teacher-preparing institutions are attempting to acquaint their students with some of the basic concepts relative to mental retarda-

tion, auditory difficulties, motor handicap, neurological impairment, speech problems and emotional disturbance. Questions are also being raised about programs for the child who is visually handicapped and intellectually gifted.

Seeing an evaluation team in action will help prospective teachers to identify themselves in the teacher's role and offer them the broad picture of the needs of the child and his family. After witnessing effective professional interaction, the group process through which possible solutions are reached may well serve as a basis for future action. Realistic team experiences may help prevent future disillusionments and prove that less than perfect setups often produce heart-warming results.

Community Relationships

One might ask why educators of teachers would spend time preparing their students for community living. Why should these young adults require such non-academic content? Why not focus all attention on classroom activities? The answers center around the need for community understanding of children and adults with limited vision. With public understanding come improved mental and physical health and the functional living of those so handicapped.

As the student successfully engages in various nonschool activities he improves his relationship with persons from other walks of life. He improves his knowledge of adults in the community and this in turn helps increase understanding of children. Association with local families points up the doubts and fears of parents in general. How intensified are these anxieties when the child is different!

The sensitive teacher accepted as a bona fide community member can do much to arouse interest in his program. For example, he can enlist the support of volunteers and recreation leaders in encouraging the children's participation in after-school activities. An interested and enlightened community will do much to foster desirable social and vocational adjustment of the visually impaired.

Leadership skills and ability in planning and organization are often enhanced through community projects. These will be assets to the teacher of the partially seeing who is required to work without supervision in a school system employing no other specialist in this area.

Current Problems

Emergency measures are presently necessary in education. Even though temporary adjustments are understandable, we must not lose sight of the ideal of a well-prepared teacher for children who are visually handicapped. Among the present practices necessary in some communities are: non-adherence to teacher certification standards; hiring teachers with no specialized preparation and requiring only a promise to study; accelerated preparation on a part-time basis with little or no opportunity for observation or supervised student teaching; bringing older teachers back from retirement; and providing the teacher with inferior work situations such as inadequate classrooms, heavy schedules, larger classes (whether the child with partial vision is in a special or regular class), poor facilities, including equipment and lighting, and inadequate salaries.

Considerable discussion has re-

sulted from Bay City's "Cooperative Study for the Better Utilization of Teacher Competency." Caution must be exerted in using teacher aids since none of the teacher's work, especially with visually handicapped children, is routine or unprofessional. If unqualified teacher aids are to be employed as teacher substitutes, these too must be temporary.

Other problems, not so easily eliminated, arise even when the teacher has participated in a rich program of preparation. For example, he might be the school's only specialist in sight conservation. Whether serving as a consultant to classroom teachers or having a special class of his own, he will often feel the need for professional support and some kind of supervision. Here the importance of in-service preparation and professional growth cannot be overlooked.

Mention should be made of the relatively few colleges and universities preparing teachers of the partially seeing. Only four institutions in this country offered complete sequences of preparation in this area in the summer of 1956: Illinois State Normal, San Francisco State, Syracuse, and Wayne.⁸ All parts of the country are not represented and many teachers cannot afford to study so far from home.

As President Caswell of Columbia Teachers College so aptly stated in his inaugural address: "Persons of high basic ability and aptitude must be attracted to educational service. Successful work in education requires a variety of talents. A person should be intellectually competent, he should be sympathetic toward other people and readily understand their problems, he should be able to work well with groups, he should be actuated by a

spirit of service and he should have an aptitude for leadership." This statement referred to teachers in general education areas. Teaching exceptional children requires a person with all these characteristics, but, I am sure, to a greater degree.

How do we obtain these highly qualified individuals? Industry and other professional fields sometimes offer greater financial attractions. Special education's only answer is the teacher's opportunity to use creative ability and interest in people. Teaching children who are partially seeing is a rewarding experience of service in an inherently democratic setting.

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SUMMER COURSES

Four colleges and universities will be offering summer courses for the preparation of teachers and supervisors of partially seeing children, according to announcements received to date. Detailed information can be obtained by writing the course directors.

Illinois State Normal University, June 17–August 9 (tentative dates). Dr. Rose E. Parker, director, division of social education, Illinois State Normal University, Normal.

San Francisco State College, June 24–August 3. Dr. Leo F. Cain, dean of summer sessions, San Francisco State College, 1600 Holloway Avenue, San Francisco 27, California.

Syracuse University, July 1–August 9. Dr. William M. Cruickshank, director, education of exceptional children, School of Education, Syracuse University, Syracuse 10, N. Y.

Wayne University, June 24–August 3. Dr. John J. Lee, chairman, department of special education and vocational rehabilitation, College of Education, Wayne University, Detroit 2, Michigan.

The National Society's Committee on Education of Partially Seeing Children has recently called attention to the great need for properly prepared teachers in this field. It is estimated that 8,000 children are now receiving these special services. Facilities are not available to some 60,000 others who need them.

HUNTON EYE BANK

The Medical College of Virginia Hospital will soon establish an eye bank with trust funds left in the wills of the late Mr. and Mrs. Eppa Hunton, Jr., of Richmond. Dr. DuPont Guerry III will serve as the bank's director.

The Sight-Saving Review

Vision Workshop in Columbus

MORE than 50 men and women interested in sight conservation attended a Vision Workshop in Columbus, Ohio, January 14-18, under the joint sponsorship of the Ohio State Department of Health and the National Society.

The objective was to provide an opportunity for exchange of information and ideas concerning vision screening programs conducted in various parts of the country, and to acquaint participants with the latest developments in this field. States represented at the conference included Pennsylvania, Maryland, Texas, Montana, Connecticut, Louisiana, Oregon, Kentucky, Michigan, Illinois, and the Territory of Hawaii. Speakers included health department and prevention of blindness agency representatives and members of the eye-care professions.

On the last day of the conference a summary session was held at which the participants found that there were these general areas of agreement:

1. The ideal goal is that every child should have a thorough professional eye examination before entering school.
2. The basic minimum annual visual screening procedure recommended is Snellen testing for distance visual acuity, combined with teacher observation.
3. The conference revealed that there were wide differences of opinion among ophthalmologists and among optometrists as to what tests should be included in a school screening procedure. It

was concluded that the final decision must rest with local professional people and that programs will work better if there is adequate consultation with representatives of the eye-care professions concerned.

4. Vision screening should not go beyond the resources for care and the possibilities of follow-up. If more than Snellen testing and teacher observation is planned, the Massachusetts Vision Test seems to offer the most reliable testing procedure. A school system might start with the plus-lens test added to the test for distance acuity, and then go into the complete testing gradually. The Massachusetts Vision Test might be used every two or three years, with Snellen distance testing and teacher observation done in the other years.
5. When a program is initiated where there is not agreement among the eye-care professions, it is better to lean toward coarser criteria for screening. This procedure will produce fewer over-referrals and fewer disagreements, thus helping to build up confidence in the program. Later, criteria for referral can be raised.
6. All children who are having reading difficulties should have thorough professional eye examinations. No vision screening procedure, regardless of how complicated or expensive, is a substitute for such examinations.
7. Community understanding of vision programs is most desirable.

Parents need to know the potentialities and the limitations of the program, that in all screening there are some over-referrals and some under-referrals.

8. It was felt by many in the workshop that the use of volunteers in a vision program is helpful in community education. However, some felt that volunteers have no part in school vision screening programs. It was agreed that there is need for frequent repetition of educational programs with parent groups, and it was felt that a parent-teacher program on vision about once a year would be desirable. Such a program could be presented by means of a brief progress report on the schools' vision screening work.
9. Regardless of the method of screening or who does it, the vision screening program should be a tool which teachers can use in relation to their program of health education.
10. In following up students referred, the least the school should find out is whether the child did go to a qualified optometrist or ophthalmologist. Parents need to know what constitutes ethical practice in accordance with the codes of ethics of the American Medical Association and the American Optometric Association.
11. Effort should be made to see that at least 90 per cent of the children referred for eye care receive professional attention.
12. It was felt that all children should be screened regardless of whether or not they already are wearing glasses. However, in following up children already wearing glasses, the parents or the child's eye

doctor should be reached in order to find out whether it is felt desirable to have a recheck.

13. Adequate preparation for and thorough understanding of the screening tests are needed by persons who conduct them.
14. Vision screening programs should attempt to locate children with possible amblyopia as early as possible; therefore programs in kindergarten and during the pre-school period need emphasizing.

WHY THEY TEACH

In a contest sponsored by the American Legion Auxiliary during the spring of 1956 teachers in the public school system were invited to submit essays on "Why I Teach." In the winning essay Mrs. Ruth Rice of Fort Lupton, Colorado, said that she taught because she loved children, and believed in their innate goodness.

"I know that latent genius exists in some," she went on. "As a teacher I may discover this pearl of genius, remove it from its shell, and polish it into a gem of rare brilliance.

"Each child is important. I believe in this and all other principles of democracy—a way of life in which each child has an opportunity to discover himself fully and become a useful member of society—a system in which teachers are free to teach the truth—a plan that shall eventually become universal. In this society education is the hub."

Mrs. Sylvia D. Dow of South Portland, Maine, wrote in the winning essay of the Eastern Division:

"If I have been able to prove to youth that personal handicaps often produce a tower of strength; that

adolescent timidity, when directed into proper channels, may develop a lion's courage, and that the greatest dreamer may become the most creative doer, then may I feel that my efforts have helped to meet the challenge of service to self."

LANDMARK IN A CRUSADE

Just 50 years ago Helen Keller, having conquered her personal handicap of blindness, helped to initiate the crusade against all diseases and conditions destroying vision. She was made an honorary vice-president of the Committee on Prevention of Blindness of the New York Association for the Blind (which became the National Society) and has continued ever since in that office. One of her first services was to write an article, "Unnecessary Blindness" which appeared in the January 1907 issue of the *Ladies' Home Journal*.

The specific purpose of her article was to declare that ophthalmia neonatorum, which was then causing perhaps two-fifths of the cases of blindness, could be prevented by the Credé method of prophylaxis. But she had a prophetic grasp of the possibilities then opening out when she wrote that "prevention has come to be the all-important aim of medical science." She was sure that if doctors could hope to exterminate yellow fever and "so subtle an enemy as tuberculosis, they should make short work of ophthalmia neonatorum, which is obvious and easily cured."

"If a tithe of the money we now spend to support unnecessary blindness were spent to prevent it," she argued, "the State would be the gainer in terms of cold economy, not to speak

of considerations of happiness and humanity. How, then, can a wise Commonwealth suffer a single case of avoidable blindness to pass unquestioned?"

Medical science has made short work of ophthalmia neonatorum, and has greatly increased the life span. Thus there has been an increase in the ocular diseases of old age. After half a century of effort, it is plain that Helen Keller's crusade is far from finished.

EYES MOVE IN DREAMS

During dreams the sleeper's eyes move as if he were watching scenes projected on a screen. Two University of Chicago physiologists, Drs. William Dement and Nathaniel Kleitman, conducted experiments with about 70 persons over a three-year period, observing eye movements by electrodes attached to the eyelids.

In a paper presented during the 1956 convention in Atlantic City of the Federation of American Societies of Experimental Biology, the two scientists said that people dreamed for as much as two hours during the night. They awoke their subjects periodically to ask whether and what they had been dreaming, and found that up-and-down movements were associated with dreams of climbing and other vertical movements. When the scene was on a horizontal plane, the eyes moved from side to side, and when the subjects were viewing something at a distance, the eyes were fixed in the gaze position.

MONEY THROWN AWAY

A London bank clerk with little respect for money threw a parcel of £5,000 in notes to a customer, *The Optician* (London) relates. A packet of 500 notes flew out and hit the customer in the eye. As a result he underwent surgery for detached retina and his vision was reduced to 1/60. A high court awarded him £894 in damages.

Education Program Liberalized

A SIGNIFICANT change that has been made in the Federal act to provide books for the blind is of interest to teachers of some partially seeing children. The new act authorizes the American Printing House for the Blind to manufacture and furnish "books and other materials" for instruction of the blind; whereas the original act specified only embossed books and tangible apparatus. The importance of this change is that it makes it legal for the American Printing House to supply books in large print which can be read by partially seeing children, some of whom come within the Federal definition of blindness, namely 20/200 visual acuity or less in the better eye after correction.

Another important change in the act is that it makes a portion of the appropriation available to state departments of education through the chief state school officer, so that children who come within the legal definition of blindness and are being educated in public schools can, by act of Congress, obtain books, globes and other materials produced by the American Printing House for the Blind on the same basis and in the same proportion as they have been received up to now by the residential schools or institutions for the blind.

A third important change in the act is that it authorizes an appropriation of \$400,000 a year in place of the former appropriation of \$250,000 which was set up in 1919. A separate previous authorization of \$10,000 a year increases the total to \$410,000.

Mrs. Hazel C. McIntire, director of special education of the State Depart-

ment of Education in Ohio, was among those who testified at the hearing on this act in Washington in July. Mrs. McIntire is chairman of the National Society's Advisory Committee on Education of the Partially Seeing.

As passed by the House and the Senate, and signed into law by President Eisenhower on August 2, S.3259 follows:

An act to amend the Act to promote the education of the blind, approved March 3, 1879, as amended, so as to authorize wider distribution of books and other special instructional material for the blind, to increase the appropriations authorized for this purpose, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the paragraph of section 102 of the Act of March 3, 1879, as amended (20 U.S.C. 102), labeled "First" is amended to read as follows:

"First. Such appropriation shall be expended by the trustees of the American Printing House for the Blind each year in manufacturing and furnishing books and other materials specially adapted for instruction of the blind; and the total amount of such books and other materials so manufactured and furnished by such appropriation shall each year be distributed among all the public institutions, in the States, Territories, and possessions of the United States, the Commonwealth of Puerto Rico, and the District of Columbia, in which blind pupils are educated. Each public institution for the education of the blind shall receive, in books and other materials, upon requisition of its superintendent, that portion of the appropriation as is shown by the ratio between the number of blind pupils in that institution and the total number of blind pupils in all of the public institutions in which blind pupils are educated. Each

chief State school officer shall receive, in books and other materials, upon requisition, that portion of the appropriation as is shown by the ratio between the number of blind pupils in public institutions (in the State) in which blind pupils are educated, other than institutions to which the preceding sentence is applicable, and the total number of blind pupils in the public institutions in which blind pupils are educated, in all of the States, Territories, and possessions of the United States, the Commonwealth of Puerto Rico, and the District of Columbia. The ratio referred to in each of the two immediately preceding sentences shall be computed upon the first Monday in January of each year; and for purposes of such sentences the number of blind pupils in public institutions in which blind pupils are educated shall be authenticated in such manner and as often as the trustees of the American Printing House for the Blind shall require. For purposes of this Act, an institution for the education of the blind is any institution which provides education exclusively for the blind, or exclusively for the blind and other handicapped children (in which case special classes are provided for the blind); the chief State school officer of a State is the superintendent of public elementary and secondary schools in such State or, if there is none, such other official as the Governor certifies to have comparable responsibility in the State; and a blind pupil is a blind individual pursuing a course of study in an institution of less than college grade."

SEC. 2. The act entitled "An Act providing additional aid for the American Printing House for the Blind," approved August 4, 1919, as amended (20 U.S.C. 101), is further amended by striking out "\$250,000" and inserting in lieu thereof "\$400,000."

EYE FACTS—Eye accidents among children occur most frequently in unsupervised play and sports. Bows and arrows, sticks and air rifles are among the worst offenders.

ESKIMOS NEED DOCTORS

A high prevalence of eye and ear troubles exists among the Alaskan natives, according to a report from the Alaska Territorial Medical Association published in *Northwest Medicine* for May 1956. In cooperation with consultants from the state of Washington the local health authorities conducted a five week survey among the Eskimos as a basis for a public health campaign in the Territory.

In the same journal, Milo H. Fritz, M.D., president of the Association, issued an appeal for eye and ear residents who are completing their training to spend six months in Alaska. Three fourths of all patients admitted to the Alaska Native Health Service Clinics in Anchorage and Mt. Edgecumbe have impaired hearing and vision caused by mastoiditis and corneal scarring due to phlyctenulosis, he said. He mentioned 80 natives classed as blind who could regain useful sight by corneal grafts.

The campaign of Dr. Fritz for making Alaska a field for training began several years ago.

DULUTH GLAUCOMA DETECTION

The Duluth Society for the Prevention of Blindness conducted a one-day glaucoma detection program at the Miller Memorial Hospital on January 23, 1956. A total of 975 persons attended the clinic but only 968 had tonometry for glaucoma. Forty-five persons had elevated tension as determined with a tonometer on one or both eyes. These persons included 12 with tensions above 32 on the Schiøtz tonometer; 25 with tensions 28 to 32 on the Schiøtz; 3 with tensions above 36 on the McLean tonometer; and 2 with tensions of 35 to 36 on the McLean.

NOTES AND COMMENT

• Population Gain

According to the *Statistical Bulletin* of the Metropolitan Life Insurance Company, in the 11½ years since the close of World War II, almost 29½ million people have been added to our population—more than the total gain during the 23 years between the two world conflicts.

The unprecedented population growth in 1956 reflects an increase in births to the highest level in our history. There were about 4,200,000 during the year, compared with 4,091,000 in 1955 and 4,078,000 the year before. The births in 1956 correspond to a rate of 25.1 per 1,000 population residing in the United States. For 11 years now the birth rate has exceeded 24 per 1,000.

The baby crop of 1956 also set a new mark in another respect—its success in overcoming the hazards of early life. Infant mortality for the year dropped to a new low of about 26.2 per 1,000 live births, thus continuing the long-term progress which has been made in conserving the lives of babies. This rate is about 1 per cent less than the previous low established in 1955, and one-fourth under that of a decade ago.

On the whole, health conditions were very favorable during 1956. However, due largely to the increasing proportion of older persons in the population, mortality rose slightly for the second year in succession. In 1956 the death rate for the total population was 9.4 per 1,000.

The number of births exceeded deaths by an unprecedented margin. The natural increase in our population

amounted to about 2,630,000 for the year; it was about 2,564,000 in 1955 and 2,597,000 in 1954, the previous high. Our country also gained about 275,000 persons through migration during 1956, or several thousand more than in each of the preceding four years.

• Legal Blindness Misleading

The legal definition of blindness used in the United States was attacked by Reverend Thomas J. Carroll of Boston, chaplain of the Blinded Veterans Association, in the August 1956 convention held in Milwaukee. He said that the technical standard in common use was false and confusing, since it applies both to totally blind and partially seeing persons. It contradicts the commonly accepted idea of blindness as complete lack of sight.

"In some ways the handicap of partial vision is worse than the handicap of total blindness," Father Carroll said. "These persons try to live in two worlds, but belong to neither. I say that partial sightedness cannot be interpreted to a sighted world. To some extent it is easier to get across the idea of total blindness."

The chaplain urged that the present 20/200 standard be replaced by a definition based on efficiency of vision, and that a meeting of ophthalmologists and other experts should work out an honest and objective criterion of blindness.

• Light Need Mounts

Persons over 60 need about twice as much light for a given task as the age group from 17 to 20, according to a study reported in *Illuminating*

Engineering for October 1956. The investigators, Sylvester K. Guth, A. A. Eastman and J. F. McNelis, have done much work on the visual factors in lighting. The present study used 100 subjects ranging from 17 to 65 in age, but put on an equal refractive basis by making sure that optimum correction was worn for viewing the task.

The test was to recognize ten words well printed in 6-point type and presented one at a time at different levels of illumination. It was found that a steady increase in footcandles was required in relation to age, and at age 45 this increase became more marked. The youngest group, aged 17 to 20, needed 30 footcandles for a certain visibility level, while the oldest group, from 61 to 65, required 58.

• Rhode Island Reports

The blindness toll of retrolental fibroplasia was reflected in the nation's smallest state, where 15 of the 20 newly registered blind under five years had lost their sight from this cause. The report of the Bureau of the Blind for the fiscal year ending June 30, 1955 gave a total blind registration of 1,062, showing a net decrease of 49 from the previous year. Seven blind persons had their sight restored by surgical and medical services.

The report urges that facilities for partially seeing children, now offered only in the Providence schools, should be extended through the state.

• High Cost of Blindness

In the last 20 years the number of people receiving blind aid has increased from 45,181 to 104,860, according to a report of the Bureau of Public Assistance, U. S. Department

of Health, Education & Welfare, published in October 1956. This is less than a third of the estimated blind persons in the nation. The annual totals for blind aid were \$5,733,000 in the fiscal year 1936 and \$73,064,000 in 1956. The federal share in these funds rose from \$885,000 to \$35,082,000. The average monthly payment to blind persons has increased from \$26.00 to \$58.00.

• Syphilis in Migrant Camps

A high incidence of syphilis was found among non-white migrant workers in eight counties in northwestern New York in a survey made during the summer of 1955. Teams organized by the state Department of Health and financed by the Public Health Service gave serologic tests to more than 5,000 migrants, and found 16 per cent with definitely positive tests and 6 per cent with doubtfully positive tests. Untreated cases were given penicillin injections. Of great importance was the case finding and treatment of the younger groups, of whom 70 per cent had received no medical care.

• Fine-Mesh Screening

More than one-tenth of the school children in Philadelphia given complete examinations by physicians during the school year 1955-1956 had eye defects, according to the annual report of the division of medical services. A total of 78,448 pupils were examined, as a rule by the school medical staff, and 53 per cent passed as normal in all respects. Of the remainder 8,323 were found in need of eye care.

Of the 7,482 children with defective vision, 88 per cent received treatment or correction during the school year.

Strabismus was treated in 60 per cent of 633 cases; blepharitis in 38 per cent of 188 cases, and 14 of the 20 children with conjunctivitis were treated.

• Progress in Florida

Prevention of blindness and restoration of sight where possible are today a large part of the work of the Florida Council for the Blind. Seven ophthalmologists in various parts of the state serve as an advisory committee and contribute their skills, often without a fee, to the Council's medical program.

Examinations were given 2,233 adults and 808 children in the fiscal year ending June 30, 1956. Major surgery was performed on 314 adults, and sight was restored to 221 patients. Of needy children referred to the Council 122 received surgery; 291 were fitted with glasses. Many home visits by staff workers are a part of the program, and a vigorous educational program using all effective channels brings information about eye care to every corner of the state.

• Atlantic City Test

The Atlantic City test for visual screening of school children was described by its originator, Samuel M. Diskan, M.D., at a recent meeting of the section on ophthalmology of the Philadelphia College of Physicians. The test was developed to detect at 20 feet impaired visual acuity, excessive manifest hyperopia and abnormal muscle balance.

In a preliminary study of 799 school children in Atlantic City the test revealed 18 per cent with impaired visual acuity, 2.4 per cent with excessive hyperopia, and 1.4 per cent with muscle imbalance. The testing time per child averaged 50 seconds.

• New Hazards

Certain fabrics involve serious danger to the eyes of employees who handle them, the New York State Department of Labor reports in the *Monthly Review* for March and for May, 1956. One hazard discovered by the Department's division of industrial hygiene is flame-proofed material impregnated with inadequately cured urea formaldehyde or melamine resin.

In seven dressmaking firms workers cutting and stitching these fabrics developed chemical conjunctivitis, and in some cases showed fine particles of resin embedded in corneal cysts, requiring surgery. In several converting firms where these materials were merely stored for resale there was a spontaneous release of formaldehyde gas which caused a mild chemical conjunctivitis among the employees. This gas can be controlled by general exhaust ventilation, but the report urges that improved and carefully cured resins be used in flame-proofing.

A second danger is chronic carbon disulphide poisoning in the manufacture of rayon. Two churn operators in close contact with these vapors developed neuropsychiatric and widespread systemic manifestations. One had several hemorrhagic areas in both fundi which responded to treatment, but the other showed almost no improvement after months of hospitalization. He had diplopia of several years' standing, lateral and vertical nystagmus of the left eye, and paralysis of the left lateral rectus muscle. Funduscopy examination revealed crumb-like exudates in the retina.

The report recommends a 50 per cent reduction in the allowable air concentration of the carbon disulphide.

• Residencies Approved

The Residency Review Committee for Ophthalmology has approved 611 residencies offered by 156 hospitals, of which 37 are federal institutions. The length of the training program is two or three years in this group. There are 22 one-year residencies in 11 other hospitals which have been approved, but on a temporary basis only.

The Review Committee, which represents the American Medical Association Council on Medical Education and Hospitals and the American Board of Ophthalmology, has adopted a new policy for residency programs. Effective July 1, 1957, only those hospitals able to provide intramurally or through affiliation at least two years of clinical training in ophthalmology will be considered for continued approval. This policy has been taken to prevent "a resident taking his training in two or three isolated programs with no assurance of continuity of experience or progression of responsibility," according to the *Journal* of the American Medical Association for September 22, 1956. This issue lists the residencies now open.

• New York State Program

At the beginning of 1956 there were 23,214 registered blind persons in the state of New York, the Commission for the Blind of the Department of Social Welfare announced in its annual report released late in July. Nearly half of this number were aged 65 and over. Analysis of the 2,369 new registrations for 1955, made by the commission's prevention of blindness service, showed that the causes of blindness were diseases of the retina and choroid in 32 per cent, cataract in 22 per cent, glaucoma in 15 per cent.

The prevention service has continued its program of stimulating eye health measures in the fields of teaching, welfare and health. Lectures on eye hygiene were given in 21 colleges and universities, in professional and practical nursing schools, and to community groups. Sight Saving Month was widely publicized.

A dramatic decline in new victims of retrolental fibroplasia was a positive gain of 1955. Only three children born during the year were reported as blinded by RLF. However, a total of 91 children of all birth years were newly registered in 1955 as RLF victims.



THE PERFECT SQUELCH

The three women at the restaurant table were no longer young, but two of them were trying hard to ignore the fact. Their clothes and make-up suggested youth, and when the menu came they took their glasses from their handbags with obvious reluctance.

"I don't really need glasses," the first woman explained, "except when I have to read fine print like this."

"The only time I need mine," the second woman hurriedly agreed, "is when the light is poor."

The third woman, whose hair was frankly gray and whose clothes looked comfortable, said nothing until she had her glasses on. Then, with a faint smile, she said, "I never use my glasses either—except when I want to see."

LARRY FLINT

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AROUND THE WORLD

FINLAND

Eyes of Prematures. Ocular defects, notably retrolental fibroplasia, were studied in a large group of premature children by Dr. Jorma Castrén of the University of Helsinki. In the series were 480 children who weighed less than 2,500 grams at birth, 217 of full birth weight, and 26 patients with RLF. The average age of the children at the time of examination was nine years.

Birth weight was evidently not a factor in refraction, heterophoria and color blindness, but had an inverse relation to the incidence of strabismus, amblyopia, lack of fusion and binocular vision, and lack of depth perception. Between two and three times as many children weighing less than 2,500 grams at birth had these defects as those of normal birth weight.

None of the premature children who had received no supplementary oxygen had RLF, but 20 of the RLF patients had received oxygen for an average of 40 days.

The study was reported in Supplement 44 of *Acta Ophthalmologica*, Copenhagen, 1956.

FRANCE

Trachoma Research. Fourteen nations were represented in the general assembly of the League Against Trachoma held in Paris in May, 1956. Reports of recent studies were presented by many specialists in the disease, and subjects were assigned for coming assemblies. In 1957 Professor Jean Charamis of Athens will discuss lacrymal trachoma; in 1958 Phillips Thygeson (USA) and Roger Nataf (Tunis) will present

papers on the etiology of trachoma. Professor Marin-Amat of Madrid will lead the 1959 discussion of the incidence and therapeutic indications of this disease which affects perhaps a sixth of the world's population.

The International Organization Against Trachoma, an interlocking body with the League, met in Madrid in 1956 and will convene in Brussels during the September 1958 International Congress of Ophthalmology.

FRENCH WEST AFRICA

Fight Onchocerca. About four per cent of the population is infected with onchocerciasis, says a report quoted in *Excerpta Medica* for October 1956. Of about 200,000 cases 20,000 have ocular symptoms, and 5,000 have been blinded by the disease. The carrier is the Simulium fly, and efforts to eradicate it have been successful in a pilot area. However, the insecticides used are poisonous to fish, on which the people depend for food, so a fresh problem has been created.

GREAT BRITAIN

No Fireworks Ban. Guy Fawkes Day on November 5 is celebrated with fireworks and consequent eye injuries, judging from an article in the *British Medical Journal* for November 3, 1956. Mr. W. May, ophthalmic registrar for King's College Hospital, London, gathered data from the city's hospitals about the aftermath of the 1955 celebration: 14 major eye injuries to men and boys, of which four resulted in loss of vision.

Phenomenal Oldster. Seventy-five years ago a boy was operated on for

congenital cataract in both eyes at the famous Moorfields hospital. He is now 90, has 20/20 vision in one eye and 20/30 in the other, and easily reads the finest print. When his spectacles, 60 years old, were broken recently he went to an oculist in Canterbury who reported the incident to the *British Journal of Ophthalmology* as proof of what surgery can accomplish for children.

Free Glasses Urged. Widespread purchase of over-the-counter spectacles without an ophthalmic examination is causing concern in medical and parliamentary circles. Many people, especially old-age pensioners, are buying glasses from shops and peddlers for as little as 28 cents. Until 1951 the National Health Service provided glasses free, but since then patients are charged \$2.80 and must buy their own frames. The situation is being investigated, and a report will be made to the Minister of Health.

However, the NHS report for 1955 shows that there has been a slight but steady increase in the number of persons using its refractive services. During the year 4,770,000 vision tests were given, and glasses were prescribed for 4,180,000. Charges to patients for lenses and frames meet about a fourth of the cost, and the NHS pays the balance of seven or eight millions sterling a year.

At the last report there were 926 ophthalmic medical practitioners in the Supplementary Ophthalmic Services, 6,328 ophthalmic opticians and 729 dispensing opticians.

SINGAPORE

Patterns of Disease. In this crown colony of roughly 1,200,000 popula-

tion acute infective conjunctivitis is the major ophthalmic problem, according to a report in the October issue of the *Survey of Ophthalmology* received from Dr. Won Kin Yip of the Eye Department, General Hospital. He attributes the high incidence of this disease to the overcrowded and unhygienic living conditions of the poorer classes.

Of 14,000 new patients treated at the hospital in 1955, nearly half suffered from conjunctivitis, mostly the Koch-Weeks type. There were 507 cases of epidemic keratoconjunctivitis, nearly all adults in a variety of occupations; no epidemic center could be traced. Trachoma, with 618 cases, was relatively low for this part of the world.

Phlyctenular disease was found in 428 patients, most of them undernourished children of poor families. Pterygium, a common condition among the laboring classes much exposed to dust and sunlight, was corrected by surgery in 382 cases. A total of 518 cataract operations was done during the year.

During the year 99 totally blind and 43 partially blind persons were registered. The causes of blindness were optic atrophy (mainly luetic), glaucoma, phthisis bulbi, malignant myopia, trachoma, retinitis pigmentosa, keratomalacia, and chronic iridocyclitis.

FAULTY DEPTH PERCEPTION

The most common visual defect found by the Greater New York Safety Council in a series of tests on drivers was in depth perception. Such a defect makes driving at night particularly dangerous, because it is then most important to gauge accurately the distance from the car ahead.

CURRENT ARTICLES

The Tolerance of High Tension in Glaucoma. B. Roncs. *American Journal of Ophthalmology*, Vol. 41, p. 409. March 1956.

The treatment of chronic simple glaucoma has revolved around the concept of raised tension, though the disease may progress to blindness after tension has been lowered by surgery. There is general dissatisfaction with the treatment of glaucoma, which relieves a symptom rather than the primary disease whose etiology is still unknown.

The cases are presented of eight Negroes with advanced chronic glaucoma who all tolerated high intra-ocular pressure for long periods and retained fairly good visual capacity. Some had surgery, which failed to reduce tension, and others were placed on miotic therapy. Though these patients, in one case observed for 12 years, had pressures ranging from 30.0 mm. Hg. (Schiotz) to 65 mm., there was only slight deterioration in their visual acuity and narrowing of visual fields.

This indicates that some eyes can tolerate elevated pressure over long periods, and that the clinician should not rush into surgery merely to reduce pressure, but should evaluate all the factors involved in each case.

Clinical Evaluation of Tonography. W. M. Grant and R. R. Trotter. *Transactions of the Pennsylvania Academy of Ophthalmology and Otolaryngology*, Vol. 9, p. 79. Summer 1956.

Because of many potential errors in using tonography the authors believe it is not practical outside of special

laboratories or clinics. The equipment is costly, and the average ophthalmologist must spend from two to four weeks under supervision learning to make accurate measurements.

The reliability of tonography in diagnosis, if coupled with gonioscopy and standard ophthalmic examination, seems good. Its value in borderline cases has not yet been determined. However, tonography can furnish information only on the hydrodynamics of the eye, which are less important than the status of nervehead and visual field.

The clinical value of tonography lies in helping to distinguish between open-angle and angle-closure glaucoma, offering occasional guidance in choice of surgery. It is of little use in evaluating the results of medical treatment.

Normal Intra-Ocular Pressure. M. Alimuddin. *British Journal of Ophthalmology*, Vol. 40, p. 366. June 1956.

Tonometric studies were made on 1,000 healthy eyes of Pakistani subjects, the first investigation of this kind in the country. Ocular tensions ranged from 13 to 30 mm. Hg. with an average of 19 mm. The 331 female eyes had an average of 20 as against 18 for 669 male eyes. In the age group 11 to 30 the average tension for both sexes was 17 mm., increasing to 19 in the next decade. Males from 41 to 60 had a tension of 19 as compared with 22 for females. Eight women and two men had tensions from 28 to 30 mm.

The cases showing ocular tensions between 26 and 30 were given repeated

tests for glaucoma over a two-year period, with negative results.

Diurnal variations were studied in 50 eyes, of which 48 had the "typical" pattern of highest tension in the early morning before rising and the lowest between six and eight in the evening. The maximum range was 3 mm. In two eyes with the reversed pattern the variations had a maximum of 5 mm.

Of 435 paired eyes 48 per cent showed no difference in tension between right and left eye, 42 per cent had higher tension in the left eye and 10 per cent in the right eye, the difference ranging from 1 to 3 mm.

Experimental and Clinical Investigations into the Resistance to Outflow of Aqueous Humour in Normal Subjects. R. Weekers, M. Watillon and M. de Rudder. *British Journal of Ophthalmology*, Vol. 40, p. 225. April 1956.

In a study of normal subjects with no family history of glaucoma and no marked ametropia, changes in resistance were noted as a function of age, of contraction of the ciliary muscle and of tonometric compression of the eyeball. Three sets of 30 subjects each belonged to age groups under 35, from 35 to 55, and over 55. The average resistance to aqueous outflow for these groups was 3.68, 3.95 and 4.43. The increased resistance may be attributable to a progressive reduction of trabecular permeability, which develops without any pathological manifestation.

After contraction of the ciliary muscle induced by eserine three similar age groups showed an average resistance of 2.73, 3.06 and 3.18, much lower than the first study averages.

The effect of hyaluronidase on 20 enucleated bovine eyes was to reduce resistance markedly. This enzyme, by breaking down hyaluronic acid and reducing its viscosity, considerably facilitates the outflow of aqueous, but its clinical role is not as yet fully understood.

Scleral Tonometry for Optometry. H. L. Wolfe. *American Journal of Optometry*, Vol. 33, p. 278. May 1956.

The author's father very seldom had a patient referred for glaucoma, but he found glaucoma in almost five per cent of those referred for other suspected pathological conditions. Because of this, he devised a scleral tonometer. (*Editorial note: Nowhere in this article is there mention of the Bailliant scleral tonometer.*) Wolfe estimates that it would take an ethical optometrist, working closely with a physician, at least a year to become proficient in using the scleral tonometer. The tonometer alone is not sufficient to reveal glaucoma, and wider use of such other tests as the tangent screen and slit lamp is suggested.

A patient should be referred to an ophthalmologist whenever vision is not normal, whenever any of the retinal, fundus or corneal reflexes are in question or whenever the utmost is done to free the patient of his complaints, yet his complaints persist. Most important, referral should be made for any apparent pathology, regardless of the degree.

Clinical Tonography. R. Santos. *Kresge Eye Institute Bulletin*, Vol. 7, p. 36. November 1955.

The tonographic findings in 86 eyes with chronic simple glaucoma were correlated with the degree of visual

impairment in a study made in the Detroit Receiving Hospital Glaucoma Clinic. The values of facility of out-flow and steady rate of aqueous flow were both higher in the group with relatively slight visual loss than in patients with advanced visual loss—marked field changes, visual acuity of 20/100 or less and marked atrophy of the disk.

Although the author did not regard tonography as a diagnostic test, he felt it useful in following the progress of the disease and response to treatment.

On Advising a Corneal Graft.

J. W. Tudor Thomas. *British Medical Journal*, April 21, 1956, p. 880.

The chances of obtaining a clear graft are influenced by many factors, some of which are difficult to evaluate. An undetected chronic glaucoma may exist, or a cataract may be masked by the corneal opacity. In some cases of slight opacity a careful trial with lenses may disclose a high degree of ametropia which can be corrected to a considerable extent.

The patient himself must be considered. Highly nervous persons are unfavorable, and those old enough to have senile macular changes. There has been hesitation about advising operations on very young patients, but the author found a child of 27 months an extremely good patient, and feels it desirable to advise surgery for a child as soon after six years of age as possible, if both eyes are defective.

A favorable eye should have nothing much wrong with it but the corneal opacity, but often conditions such as epithelial degeneration, ulceration or entropion can be improved by pre-

liminary operations. If there is a strong suspicion of cataract the lens should in many cases be extracted a few months before keratoplasty, though corneal transplant is more difficult on an aphakic eye. There are many situations in which a lamellar graft is preferable to a perforation type.

The prognosis in chemical or thermal burns is never certain, but the chances of success in other conditions run from 50 to 90 per cent (reported in cases of conical cornea). The chances of losing an eye are about 2 per cent. With these odds, a patient is often grateful for even a small improvement in vision.

Considerations Affecting Technique and Results in Keratoplasty. J. W. Tudor Thomas. *Transactions of the Ophthalmological Society of the United Kingdom*, Vol. 75, p. 473. The Doyne Memorial Lecture, Oxford Ophthalmological Congress, June 1955.

A review of the literature in keratoplasty shows a wide variation in results. The overall percentage of clear grafts runs from about 36 to 67, and improvement is reported in from 50 to 85 per cent of the cases. No follow-up periods are indicated. In circumscribed penetrating grafts everything depends on whether the eye is favorable or not. In general, improvement runs from 10 to 70 per cent according to favorability, and 10 per cent are made worse by the operation. Lamellar grafts result in improvement in about 65 to 75 per cent, and the condition is made worse in 6 or 7 per cent.

The author suggests a scheme of classifying favorability and judging the results of penetrating grafts, and uses this scheme in discussing 100

such operations of his own. Of 40 favorable eyes the grafts were clear or almost clear in 29 (72 per cent); of 60 unfavorable eyes only 8 clear grafts resulted (13 per cent). Aphakia, an adverse factor in penetrating keratoplasty, was present in 18 cases, none of which resulted in clear grafts. The author says that correct evaluation was made of 90 per cent of his cases six months after operation; 6 per cent after one year, and 4 per cent after two years.

In 16 lamellar grafts, three were therapeutic and cleared up corneal ulcers. Of the other 13, six were clear or almost clear, three were improved, and none was made worse. A recent experiment with an acrylic implant retained in place by a lamellar corneal graft was tried in six extremely unfavorable cases, and in four of them the implant had been retained when this report was made a few months later.

Étude statistique des résultats de 170 greffes de cornée. G. Offret and G. Chilaris. *Archives D'Ophtalmologie*, Vol. 15, No. 4, 1955, p. 373.

In an analysis of 4,360 cases of keratoplasty gathered from the literature since 1948, the authors estimate the results as follows: Good results in 45 to 65 per cent, with 15 to 20 per cent of the patients gaining vision of 5/10 or better; some improvement in 20 to 30 per cent; and unfavorable results in 10 to 15 per cent. The majority of the authors evaluated their results six months or more after surgery.

In their own series of 170 cases, of which 141 were by the lamellar method, the best results were obtained in herpetic keratitis (80 per cent successful) and the poorest in trachomat-

ous keratitis (30 per cent successful). The overall percentage of successful grafts was 63 gaining a visual acuity of 1/10 or better (18 per cent gained 4/10 or better); 14 per cent under 1/10; 18 per cent were not improved and in 5 per cent vision was diminished. The follow-up period for these 170 cases is not indicated.

Ocular Wound Healing with Particular Reference to the Cataract Incision. J. H. Dunnington. *Transactions of the Ophthalmological Society of the United Kingdom*, Vol. 75, p. 137. The Bowman Lecture, Session 1955.

In normal wound healing recent studies have shown that the posterior part of a cataract incision is much slower to heal than the anterior portion. Posterior healing is not complete for at least two months.

The author investigated the effect of increased intraocular pressure on wounds in the monkey eye, and found that it caused seepage from the incision rather than a sudden rupture. But a rupture and bleeding into the anterior chamber can easily be produced by external pressure on the eyeball. Such pressure can also arise from forcible contraction of the eyelids or of the extraocular muscles.

Delayed reformation or late loss of the anterior chamber occurred in 13 per cent of 800 cataract extractions performed by the author. Diamox administered postoperatively did not affect this complication nor the incidence of hyphema. A fifth of this series of cases had bleeding into the anterior chamber. With silk sutures the incidence was 17.7 per cent, and with surgical gut it was 23.5 per cent.

Analysis of 171 aphakic enucleated eyes in the files of the Institute of

Ophthalmology of Presbyterian Hospital showed that faulty wound healing was due to tissue incarceration, stromal proliferation or epithelial invasion. This last condition was found in nearly half the eyes enucleated since 1941 when corneo-scleral sutures came into use. Since improper suturing can produce epithelial ingrowth, better attention to details should lessen its frequency.

Factors Contributing to the Successful Treatment of Retinal Detachments. G. Clark. *New York State Journal of Medicine*, Vol. 56, p. 3295. November 1956.

Our thinking about retinal detachment will be clearer if we keep in mind that a disease change in the vitreous is responsible. Since this is a progressive disease early detection is important, and here the physician should have a high index of suspicion in examining patients past the age of 45, whether or not they report symptoms. Essential in this scrutiny are a maximally dilated pupil, a darkened room, a strong light source, and by preference the indirect ophthalmoscope.

Before and after surgery the patient should be kept relaxed with the help of tranquilizing drugs, but should not be required to lie flat and motionless in bed. At Presbyterian Hospital in New York City the last consecutive 268 patients have been allowed to move about after the first 36 hours, and under this regime the rate of recurrences has dropped significantly.

Suggestions are offered for choosing operative techniques and for surgical procedures. In complicated detachments procedures such as scleral shortening and buckling alter the

natural state of the eye. The vitreous implant of Dr. Donald Shafer is the only procedure in use today which leaves the eye in its natural form. His is the greatest contribution to retinal detachment surgery since Gonin, for it is not only effective but actively combats the cause of the retinal detachment in the vitreous.

Vitreous Implant in Retinal Detachment: A Study of 50 Consecutive Operations. D. M. Shafer. *New York State Journal of Medicine*, Vol. 56, p. 3300. November 1956.

In 50 cases of retinal detachment, all previous failures by other techniques, the author's procedure of injecting fluid vitreous aspirated from donor eyes was successful in 42 per cent. These unselected patients were given surgery at the Manhattan Eye, Ear and Throat Hospital during the last seven years. The standard of success was reattachment of all the available retina for six months or longer. Of the 21 successful cases six gained vision of 20/30 or better, and six 20/40 to 20/70.

The technique for implanting vitreous is described. Unlike air or saline injections, the vitreous is evidently retained for a long time, and appears to have a long-term therapeutic value over and above the problem of reattachment. The appearance of the retina improves; folds and vitreous bands are reduced or absent. Post-operative complications were surprisingly few, there were no major hemorrhages, panophthalmitis nor endophthalmitis. Thus far no vitreous implant eye has been lost. The pre-operative status of all these cases ranged from bad to hopeless; most had more than one complication.

Ocular Sarcoidosis. D. Ainslie and D. Geraint James. *British Medical Journal*, April 28, 1956, p. 954.

Early diagnosis and treatment may save eyes attacked by sarcoidosis. This disease of unknown origin may involve organs, skin, lymph nodes, bone, nervous system and eyes. Though it tends to spontaneous healing by fibrosis this regression may come too late to save vision if the eyes are involved.

In a series of 100 patients with histologically confirmed sarcoidosis eye changes were observed in 28. Sarcoid iridocyclitis is the most frequent involvement, and in this study 12 cases of the chronic type and eight of the subacute form were found. There were three cases of dry keratoconjunctivitis and one case each of enlarged lacrimal glands, infiltration of eyelids, phlyctenular conjunctivitis, Eales's disease and macular edema. This last condition may not have been related to the sarcoidosis.

This group exhibited other sarcoid changes in skin, lungs or glands. Whatever the site the histological picture is the same, the lesions consisting of nests of large epithelioid cells with occasional giant cells. When skin lesions or enlarged superficial lymph nodes are present biopsies may be taken to aid ocular diagnosis, since the eye changes themselves are not characteristic. The Kveim antigen test is simple, safe and specific.

The only effective treatment is by one of the cortisone group, and eight moderately severe cases of chronic iridocyclitis responded well. The four severe cases show the importance of early diagnosis. The two treated in the early stages were soon brought under

control, but the two treated late ended in blindness. The rest of the series, given cortisone and other medication according to the type of case, recovered in a few weeks or months, often with some residual damage.

Myasthenia Gravis: a Personal Study of 60 Cases. H. Garland and A. N. G. Clark. *British Medical Journal*, June 2, 1956, p. 1259.

This uncommon disease, of which the etiology is obscure and the course unpredictable, was found to involve the eyes in nearly 90 per cent of a series of cases observed by Dr. Garland for 15 years and traced as far as possible from 1934 to late 1955. Very few such studies have been made of myasthenia gravis. Of the 60 patients under review, seven could not be traced in 1955, and most of the information relates to 53 patients.

It is estimated that the incidence of this disease is at least one in 40,000 in Great Britain. In the present study there were 25 males and 35 females, the age of onset ranged from six to 75 years, and the disease killed one patient within a year and continued in another for 28 years. Daily fluctuations, partial or complete remissions for days or years, and total spontaneous remissions indicate the mercurial nature of the disease. Half of the series had complete remissions, the others enjoyed periods of freedom from symptoms ranging from days to seven years, during which no treatment was necessary.

Of the 53 patients traced up to September 1955, only five had never complained of ocular symptoms, and 12 had ocular symptoms only. Intermittent diplopia was found in 49 cases and ptosis in 40; both tended to de-

velop early. Of 26 with ocular symptoms at onset only three developed other manifestations after a year or more.

Neostigmine (prostigmin) proved the best treatment; dosages from 600 mg. daily to 1,000, depending on individual needs, have been tolerated for as long as 20 years.

Retrolental Fibroplasia: Cooperative Study of Retrolental Fibroplasia and the Use of Oxygen. V. E. Kinsey, with the assistance of J. T. Jacobus and F. M. Hemphill. *A.M.A. Archives of Ophthalmology*, Vol. 56, p. 481. October 1956.

This is the full report of the controlled study of RLF by 75 pediatricians and ophthalmologists connected with 18 hospitals, made during the year ending June 30, 1954. Much of the data obtained during the work is presented in tables and graphs, and the findings in regard to many factors in the disease are analyzed with a statistical confidence level throughout of 0.01.

The study was set up to determine whether exposure of the premature infant to an oxygen-enriched environment was positively associated with the incidence of RLF; whether restricting of oxygen influenced the survival rate; and what information of a general nature could be obtained.

Of the 786 premature infants weighing 1,500 grams or less at birth, born in or brought to the cooperating hospitals, the final study population was 586 infants who were closely followed from the age of 48 hours for at least two and a half months, and in most cases for six months. A third of the infants born in each hospital were assigned at random to a group given

oxygen for 28 days (routine-oxygen group) and two-thirds to the group given oxygen only for clinical need, at the discretion of the pediatrician (curtailed-oxygen group). On the basis of findings of the first three months all babies were put on curtailed oxygen during the remaining nine months. There were 53 infants in the routine-oxygen group and 533 given little or no oxygen from the age of 48 hours when they were admitted to the study.

The mortality rates in the two sets did not differ significantly.

The incidence of cicatricial stages of RLF was about three-and-a-half times higher in the routine-oxygen group as in the series receiving curtailed oxygen. Retrolental fibroplasia was so much more frequent in infants of multiple birth than in those of single birth that all tabulations were made separately. The percentages of cicatricial stages in the routine-oxygen group were 17 for single births and 67 for multiple births; in the curtailed-oxygen group during the same three months, 5 for single births and 18 for multiple.

The incidence of all grades of RLF increased rapidly with increased *duration of exposure to oxygen*. The oxygen concentrations from the whole series ranged from 41 to 50 per cent. It appeared that in concentrations between 30 and 50 per cent the amount of oxygen administered was not as significant as the duration. But with exposures over 12 days the incidence of RLF did increase with the concentration.

Incidence was inversely related to birth weight for all infants, but was not appreciably dependent upon gestational age. It was not apparently influenced by race, sex, type of incuba-

tor, geographical location, season of the year, or other factors associated with infant or mother. The *severity* of cicatricial RLF was not dependent on these factors, nor on duration in or concentration of oxygen.

Of the 112 infants who received no added oxygen after age 48 hours only one developed cicatricial RLF, and this baby was known to have received 11 hours of oxygen prior to admission to the study.

Spontaneous regression of RLF from active stages 1 and 2 occurred in about 90 per cent of infants of single birth, in both groups. It was much less frequent from stages 3, 4, and 5 for single births and even rarer for multiple births (11 infants of 34 regressed).

There has been much discussion about whether RLF is initiated by rapid withdrawal from oxygen. Some cases in this and other studies were observed to occur before removal from oxygen. Moreover, rapid withdrawal after one or two days in oxygen was associated with a lower incidence than slow withdrawal after a longer period; i.e., exposure, not method of withdrawal, is the initiating factor.

The conclusions are that limited oxygen does not affect the survival of premature infants; that duration in oxygen is the important factor in the production of RLF; that any concentration of oxygen above that in air may produce RLF; that infants of multiple birth are significantly more susceptible to RLF than infants of single birth; and that rate of withdrawal does not seem to play a primary role in the pathogenesis of RLF.

The recommendations are that a premature infant, particularly one of multiple birth, should be given an absolute minimum of oxygen consist-

ent with the clinical conditions of anoxia, and that in this case oxygen should be prescribed on an hourly basis and the concentration should be as low as possible.

Retrolental Fibroplasia: A Reduction in Incidence Following a Decrease in Use of Oxygen Therapy for Premature Infants. A. H. Parmelee, Jr., I. S. Pilger and W. O. Austin. *California Medicine*, Vol. 84, p. 424. June 1956.

A record of cases of RLF among premature infants at the Harbor General Hospital, Los Angeles, was begun in January 1952. Since that time one of the authors has examined the eyes of these infants prior to discharge and followed up any cases of RLF. In the three years to January 1955 four per cent of the 358 surviving infants with birth weights of 2,500 grams or less developed the disease, in nine out of the 14 cases the cicatricial phase. These were all tiny infants; none weighing more than 2,000 grams at birth was affected.

Because of early reports of the possible involvement of oxygen therapy in the development of RLF, the amounts given were decreased beginning in 1952, and by early 1954 were held down to a minimum. No case of RLF had developed in the 16 months between February 1954 and the writing of this report.

The Development of Vision in the Cross-Eyed Child. G. S. Ellis and G. M. Haik. *Journal of the Louisiana State Medical Society*, Vol. 108, p. 450, December 1956.

It is essential that treatment of strabismus be started before the potentials of normal binocular vision are

lost. If it is delayed until the child is of school age little but cosmetic improvements can be expected.

In the years before age six the child learns to see, developing the three delicate mechanisms of fixation, visual acuity and fusion. Fixation normally begins between the third and fifth months of infancy, then visual acuity develops from perhaps 20/200 to 20/45 by age two. At that age the fusion reflex is first recognized. Its function is to correct any minor imperfections in the coordination of the two eyes. If the child is unable to practice fusion the reflex may be extinguished and squint results. At three years the normal child has established the fusion reflex, which may deteriorate greatly from disuse; at four years the reflex is more firmly grounded. By the eighth year visual acuity and fusion are unconditionally fixed.

When the crossed eye occurs before age six the child suppresses with the weaker eye to avoid double vision, and acuity in that eye may deteriorate to 20/200. Moreover, the extra-ocular muscles will develop irreversible changes limiting their motility. Unless the squint is of nervous origin there is no chance of spontaneous cure.

The various causes of strabismus are mentioned. Therapy begins with diagnosis and preparation of the parents to understand and cooperate.

The Variability of Retinoscopic Measurements when Applied to Large Groups of Children under Visual Screening Conditions. M. J. Hirsch. *American Journal of Optometry*, Vol. 33, p. 410. August 1956.

In giving a retinoscopic test to about 10,000 school children in Los

Angeles County the examiners, fifth-year optometry students, happened to examine 36 children twice. The tests were made no more than a week apart, probably by different examiners. Checking of their records showed that there was a difference ranging from 0.12 to 0.75 diopters in the two measurements. The standard deviation of 0.34 D. happened to agree closely with variations observed in two other mass screening tests.

Thus two retinoscopic determinations on the same individual under very nearly the same conditions may differ by as much as 0.75 D. (at one per cent confidence limit). Moreover, the author finds what he calls a subconscious bias on the part of examiners to make the refraction of the second eye agree with that of the first. In establishing criteria for referral of school children, these possible deviations should be taken into account.

Relationship Between Reading and Various Aspects of Visual Anomalies.

P. M. Steinberg and R. Rosenberg. *Journal of the American Optometric Association*, Vol. 26, p. 444. March 1956.

Relationships between visual skills and reading skills were investigated in 1,000 children between the fourth and eighth grades. The subjects were divided according to IQ into low (30 per cent), normal (40 per cent) and superior (30 per cent). Each child was given a series of tests on the Bausch & Lomb Ortho-Rater to determine his visual skills.

Lateral muscle imbalances adversely affected reading achievement in the low IQ group, but had little influence on the others. Vertical imbalances were associated with poor reading in

the low and normal IQ groups. Taken by itself, esophoria or exophoria was less significant than a poor muscle balance. Hand or eye dominance was significant only in the low intelligence group, where right handed and/or right-eyed children were better readers than those with left dominance. Depth perception was associated with reading scores only in the middle (normal) group, where good stereopsis and good reading were related.

Visual acuity, the most widely used measure of adequate vision in schools, showed no correlation with reading scores for near, and for distance was significant in a sporadic way only in the middle group. In general, normal and superior children showed less correlation between visual skills and reading ability; with these children other factors such as home influences are perhaps more important.

Effect of Sloped Text upon the Readability of Print. M. A. Tinker. *American Journal of Optometry and Archives of American Academy of Optometry*, Vol. 33, p. 189. April 1956.

The speed of reading and the visibility of words are markedly higher when the material is held at a 45° angle instead of lying flat. Individual tests were made of 300 university students who read 8-point and 10-point texts at four different angles from the line of vision: at a 45° slope (perpendicular to the line of vision), at 90° (flat on the table) and at 10° and 30° below the horizontal (as some people do when reading a newspaper).

When 10-point type was flat on the table, reading was 6 per cent slower than at the 45° angle, and 8 per cent slower when 8-point type was used. Tipping the material 10° and 30°

below horizontal slowed reading of 10-point type by 9 and 17 per cent.

The visibility measurements were recognition of six words presented at a time, using the Luckiesh-Moss Visibility Meter. With one exception (8-point type at 90°) visibility decreased when the test material sloped downward from 45°.

Though some schools and libraries have recognized the value of sloping surfaces for reading, in most cases school desks are not sloped at the optimum angle of 45° which provides the best conditions for clear perception and fast reading.

Amblyopia: A Comparison Between Distance and Near Vision. G. V. Catford. *British Journal of Ophthalmology*, Vol. 40, p. 633. October 1956.

Of 50 consecutive cases of amblyopia in candidates for the Royal Air Force, 70 per cent were found to be hyperopic; myopia and mixed astigmatism were each 14 per cent, and there was one case of emmetropia. An arbitrary standard of reasonable near vision was set, insuring that the subject could read average type, and with correction 27 of the 50 cases passed the test. These men can be trained for certain trades in the Air Force, where previously they might have been rejected.

Ophthalmic Aspects of Whiplash Injuries. J. M. Middleton. *International Record of Medicine and General Practice Clinics*, Vol. 169, p. 19. January 1956.

The pupil of the eye and its associated structures can provide valuable clues in diagnosing residual trauma from whiplash injuries (damage to the

neck structures when the head is suddenly jerked forward, backward or to one side, as in rear-end collisions). The sympathetic nervous system, which controls the dilating of the pupil, crosses the cervical region twice.

An interruption or abnormal function of the sympathetic pathways to the head, which may occur in whiplash injuries to the cervical spine, may produce the Horner syndrome, or "sympathetic ophthalmoplegia." The anatomy and physiology of the sympathetic nervous system is not exactly known, and people with whiplash injuries often present vague complaints about blurred vision and a loss of focus. Since it is the sympathetic which flattens the lens for distant accommodation, the flattened lens and dilatation of the pupil are part of the same stimulation. Sympathetic paralysis may not make the patient clearly myopic, but the loss of accommodation for distance becomes apparent with refraction.

The Pterygium Problem in Hawaii.

F. J. Pinkerton. *Eye Digest*, Vol. 1, p. 13. January 1956.

Reviewing his records of 3,760 cases of pterygium treated in Hawaii between 1920 and 1954, the author believes this condition is a chronic inflammatory process starting as a pinguecula, that its behavior varies with the individual, and that it is influenced by environments in which wind, dust, sun, smoke, and other irritants are conspicuous. For this reason he believes that areas like Los Angeles suffering smog may be conducive to pterygium.

Of the Hawaii patients 1,559 were Japanese and 881 Filipino, both groups largely in plantation work.

Occupation rather than race appears to be the important factor. Farmers, dock workers, seamen and plantation workers comprised 1,345 of the case records, with mill hands, carpenters and mechanics second on the list with 924 cases. Two-thirds of the cases fell in the age groups between 20 and 40, with 1,272 in the 20 to 30 bracket. Only 18 per cent of the total were women. These factors suggest that outdoor work under conditions irritating to the mucous membranes is related to high incidence of pterygium.

Recurrences after surgery lessened from 25 per cent in 1942 to 17 per cent in 1954. This improvement is ascribed to a shift from older surgical procedures to a new method with dissection and a bare sclera, followed by beta ray therapy. Cortisone was found to be of no value in postoperative therapy. Pterygium surgery should be done only by the specialist.

Traumatic Hyphema. J. W. Rosenthal. *Journal of the Louisiana State Medical Society*, Vol. 108, p. 99. March 1956.

The use of BB guns, the one controllable factor in eye injuries, should be outlawed throughout the country. In a study of 146 cases of traumatic hyphema treated at the Charity Hospital of Louisiana at New Orleans 26 were caused by this unnecessary toy. As a rule the patients in this series were youngsters hurt at play or older people injured in a quarrel.

Twelve eyes were lost in the group. Of the 27 cases of complete hyphema 55 per cent were cured, and all but one of the cases of partial hyphema recovered. Some cases were followed for as much as three years after injury; the average was 147 days. About a

third of the patients suffered no complication. Though all cases of this type should exhibit signs of traumatic iritis or mydriasis, these were overlooked as a rule, and only 26 cases of the former and 9 instances of traumatic mydriasis were described. Secondary glaucoma developed in 21 cases, recurrent hemorrhage in 16, vitreous hemorrhage in 15, traumatic cataract in 11, and corneal staining in 10.

The therapy advocated in all hyphemas is: absolute bed rest, bilateral patch, sedation, atropine, rutin, vitamin C and dehydration. In complete hyphema an early keratome incision with irrigation of the anterior chamber is indicated. A complete secondary hemorrhage, which often causes complications which mean loss of the eye, calls for immediate paracentesis and irrigation.

Human Chorioretinal Burns from Atomic Fireballs. H. W. Rose, D. V. L. Brown, V. A. Byrnes and P. A. Cibis. *A.M.A. Archives of Ophthalmology*, Vol. 55, p. 205. February 1956.

The authors, of the U.S.A.F. School of Aviation Medicine, Randolph Air Force Base, describe six cases of retinal damage caused from exposure to an atomic detonation from two to 10 miles away. A previously reported study with rabbits demonstrated similar chorioretinal burns occurring at distances up to 42.5 miles.

Eye damage occurs at much greater distances from atomic flashes than do skin burns, due to the focusing effect of the optical system of the eye and to the pigment distribution in the tissues. The heat generated in the thin pigmentary layers may theoretically exceed the boiling point of water, and

in the experiments with rabbits it appeared that water-vapor explosions had occurred in these layers.

The blink reflex, occurring at about 0.1 second, cannot protect the eye from the atomic detonation, which has a peak of emission before 0.01 second, when it is a hundred times brighter than the sun. The area of the pupil determines the irradiation of the retina, and since this area at night may be 64 times that in daylight, the possible damage from a night detonation is much greater.

After months of medical observation at least five of six cases showed scotomata which are probably permanent, and in four cases chorioretinal tissue was destroyed and replaced with scar tissue, permanently destroying visual function in these areas. An officer who viewed the fireball from a distance of only two miles with the left eye unprotected had a visual acuity of 20/70 in that eye six weeks after exposure, and an absolute scotoma suggesting the shape of the early fireball. In this case future retinal detachment is possible.

Chorioretinitis Produced by Atomic Bomb Explosion. J. Landesberg. *A.M.A. Archives of Ophthalmology*, Vol. 54, p. 539. October 1955.

A young Army officer with 20/20 vision in both eyes glanced over his left shoulder as a test atomic bomb exploded 3,700 yards away. He thus caught the original blinding flash of the explosion, whose effect is quicker than the blink reflex, and was blinded for several minutes. Two days later an eye examination showed a "hole" in the left retina, with a large exudate. Vision in this eye was 20/100.

In April 1955, two years after the

injury, vision in the left eye was still 20/100. A refractive error was present in both eyes, otherwise the right eye was normal. Evidently it had been shielded from the flash by the bony structures of the nose. The left eye had a pigmented area in the macular region about one-fourth the disk diameter, and shaped roughly like an inverted mushroom. An absolute scotoma was present within the 5-degree circle of the central field.

Though government scientists state that the effect of thermal radiation on the eyes is surprisingly small, judging from the slight eye damage at Hiroshima and Nagasaki, the necessity of covering the eyes during an atomic blast is clear. In Japan the explosions were unexpected, and evidently by the time the onlookers located the fireball, its first intensity had passed. The pupillary and blink reflexes are too slow to prevent a retinal burn during the first 0.1 second of an explosion. At a given distance the burns on the retina are more severe than skin burns.

Solar Chorioretinal Burn. T. Das, M. S. Nirankari and M. R. Chaddah. *American Journal of Ophthalmology*, Vol. 41, p. 1048. June 1956.

After the solar eclipse visible in India on February 25, 1952, a study was made of 37 patients with macular burn (63 eyes). Most of the cases were followed up to 10 months. Refraction showed that emmetropic or slightly hyperopic eyes suffered most, since the sun's rays were more accurately focused in them. The age group from 11 to 30 comprised 84 per cent of the cases.

Subjective complaints were foggy vision, chromatopsia and colored scotomas. In three eyes the macula ap-

peared to be normal; 18 showed erythema and 34 edema-erythema. Eight patients who reported for examination from one to eight months after the eclipse were found to have a partial macular atrophy. In addition, six eyes developed atrophic spots during the follow-up period. The atrophy is due mainly to vascular embarrassment caused by edema.

Notes on Illumination and its Effect on Vision. P. Pollack. *Optical Journal-Review*, June 1, 1956, p. 27.

Two highly dubious statements are often made about illumination in relation to vision. One is that the vision specialist is an authority on scientific lighting. He may be qualified to advise his patients on lighting for routine tasks, but the mathematical-optical-engineering knowledge necessary to solve basic problems is possessed only by the illuminating engineer.

The second dubious statement is that poor or inadequate lighting is the cause of ametropia. A leading expert on illumination claims that "the appalling prevalence of eye defects" nowadays is mainly due to bad lighting. Actually, lighting conditions have been vastly improved during the last 50 years, and if refractive errors seem to have been increasing during the same period, this claim would appear to be self-contradictory.

The fact that more people are wearing glasses than formerly may merely indicate that more people are having their eyes examined than ever before. Illumination is evidently not an important factor in the production of refractive errors. Faulty lighting is certainly not the cause of inherited myopia, and there is no evidence that it is a factor in other types of myopia.

BOOKS AND PAMPHLETS

PEPPARD RE-REVIEWED

Because Peppard's *Sight Without Glasses* is being made widely available in a pocket-book edition, the following review by the late Dr. Harry S. Gradle is being reprinted by courtesy of the American Medical Association from its *Hygieia* (now *Today's Health*) of August 1943. The only portion of the review that seems outdated is the estimate of the number of glaucoma blind. The current estimate is 43,500.

SIGHT WITHOUT GLASSES. By Harold M. Peppard. Cloth. Price, \$1.00. New York: Garden City Publishing Co., Inc., 1940.

The material in this book is pretty much the same old hokey that was started some forty years ago by the now defunct William Horatio Bates, but it lacks much of the pseudoscientific jargon that graced his writings. The scientific mistakes average 3.57 per page. The lowest number on a page was one, but three-quarters of that page was taken up with diagrammatic illustrations taken from a standard textbook on diseases of the eye.

The eye conditions taken up serially are: eyestrain, headaches, farsightedness, nearsightedness, middle age sight, astigmatism, cross eyes, cataract, glaucoma and inflamed eyes. Each condition is accorded the dignity of from eight to twelve small pages. For all of these conditions the advised treatment is practically identical, namely: blink frequently, localize and focus the eye's attention on one spot, shift frequently, read the Snellen test card, and do the "long swing"—plus a few variations of these directions.

I found the "long swing" particularly fascinating, for the illustrations are practically those designed to teach pivoting in golf. The instructions read: "Stand with feet about 6 inches apart. Turn the body to the right, at the same time lifting the heel of

the left foot (Alex Morrison says that in the proper golf pivot, the heel should not be lifted but the foot merely rolled). The head and eyes and arms should be left at ease (place not specified) to follow the motion of the body as they will. (That is the way my dog obeys when I call him to follow.) Now place the left heel once more on the floor, turn the body to the left, raising the heel of the right foot. (No mention made of the proper follow through.) By alternating this action of the feet, the body and head are turned in an arc of 180 degrees. The motion is performed smoothly and easily. Do not pay any attention to the apparent motion of the objects in the room. Sixteen complete turns a minute is the most beneficial speed." And this is the exercise that is guaranteed to cure all sorts of eye defects!

If the instructions in this and similar books were to be followed only by people with eye conditions that were not of a serious nature, not a word should be said; it is the inalienable right of an American citizen to follow whatever fad he wishes, provided he does not thereby damage the rights of his fellow citizens. When a fad can and does result in loss of sight and eventual blindness, removing the unfortunate citizen from the sphere of economic and social usefulness and making him the recipient of life-long care that has to be provided by his fellow citizens, then the man who is responsible for that fad is a menace to the community. Consider the blindness (of both eyes) due to glaucoma in the United States. The number of persons thus afflicted is around 20,000 and the pension costs for them are \$7,300,000 per year. We know from the work of the past fifteen years that 85 per cent of those people would still be seeing had the disease been diagnosed early and treated. Now this charlatan proposes to treat glaucoma by the "long swing."

How much truth is there in the statements that vision can be restored and pre-

served without the use of glasses by these and similar exercises? Not one iota! I have had the opportunity, as have many other eye physicians, of examining some two dozen patients both before and after these so-called treatments and exercises. In fact, several of the patients were treated by the venerable Bates himself. In not one of those cases had there been any improvement in vision or in the strength of glasses required. Quite the contrary, in several cases of near-sightedness, there had been a definite increase in the amount of the ocular defect.

HARRY S. GRADLE, M.D.

STRABISMUS: DIAGNOSIS AND TREATMENT.

Beulah Cushman, M.S., M.D. Lea & Febiger, Philadelphia, 1956. 203 p. \$6.00.

The author, associate professor of ophthalmology at Northwestern University Medical School and attending ophthalmologist at several Chicago hospitals, follows the objective approach to the problems of motor anomalies which was developed by Doctors Alexander Duane and James Watson White. Much of their unpublished material is distilled in these pages, but Dr. Cushman's own contributions to what she calls the White school are by no means negligible. Dr. Derrick Vail says in his foreword, "Her results have been uniformly good, in many instances brilliant" and her book is "a valuable contribution towards the ultimate solution of this massive problem."

The 62 case histories at the end of the volume indicate the success Dr. Cushman has had with patients aged four to 42. To her mind there is no substitute for a correct diagnosis. "All squint work," she writes, "should be approached primarily from the standpoint of binocular vision. Some schools

of thought believe the primary interest should be fusion training; however, since a muscle imbalance cannot be cured by orthoptic exercises, the squint should be approached through diagnosis and not from the fusion standpoint."

Dr. Cushman devotes the bulk of her text, therefore, to a detailed description of diagnostic procedures. Diagnosis is not complete until conditions such as amblyopia and certain refractive problems have been corrected. The author's suggestions for the treatment of amblyopia ex anopsia in young children are of special interest. In the section on surgery she has included Dr. White's unpublished material on the maximum and minimum amounts of recession or resection which can be done without limitation of muscle function. In her case histories it is possible to watch how these prescribed amounts are followed in line with the individual diagnosis.

NEUROLOGY OF THE OCULAR MUSCLES.

Second Edition. David G. Cogan, M.D. Charles C. Thomas, Springfield, Ill., 1956. 284 p. \$8.50.

Dr. Cogan has revised and enlarged his text which first appeared in 1948 and which reflects recent advances in this complex specialty. He states: "More than most specialties, neuro-ophthalmology is concerned primarily with localization of disease and only secondarily with the nature of the underlying process . . . the clinical manifestations of disturbances of the ocular motor system vary more with the site of the lesion than with the nature of the lesion."

Considerable material has been added dealing with the myopathies: myasthenia gravis, pseudotumor and

the ophthalmoplegias. Internuclear ophthalmoplegia receives increased attention because of its importance in multiple sclerosis and the recent recognition of a unilateral variety caused by vascular disease. New work in sensory and motor mapping of the cerebellum has yielded data on functional localization "so that it is now possible to state categorically that the cerebellum has a somatotopic organization quite as orderly as that for other portions of the nervous system."

Dr. Cogan's lucid presentation and admirable style make his book invaluable to colleagues in special and general practice, and to students in post-graduate ophthalmology.

BIOCHEMISTRY OF THE EYE. Antoinette Pirie, M.A., Ph.D. and Ruth van Heyningen, M.A., D. Phil. Charles C. Thomas, Springfield, Ill., 1956. 316 p. \$7.00.

Ophthalmologists will welcome this book, which sums up the advances of recent years in a field where many areas remain to be explored. Although far too fragmentary knowledge exists as yet of the biochemical processes of the normal and abnormal eye, something is known of pathological change, of the connections between embryological and biochemical processes, and of the general biochemistry of the body which applies to the eye, specialized though it is.

Discussion is omitted of certain unexplored areas—tears, lids, lacrimal glands, conjunctiva, sclera, choroid and optic nerve. The biochemistry of the lens is best understood, and the first half of the book is devoted to this tissue, which the authors consider in many ways ideal for metabolic studies. "It is isolated, it is non-vascular and

it is derived from a single type of embryonic ectodermal cell. Its metabolism will therefore be the metabolism of a single type of cell in various stages of growth and decay." The several types of cataract are discussed, including those induced for experimental purposes. In diabetic cataract the authors observe that its onset is faster the higher the level of glucose in the blood, but the mechanism by which the lens is affected is still unknown. The metabolic changes in senile cataract are so slow, and so difficult to observe, that little can be said other than to note changes in its protein, phosphate, glutathione, ascorbic acid, sodium, calcium, potassium and chloride content.

Following are chapters on the cornea, retina, vitreous, aqueous and ciliary body and chemical aspects of vision. A final section discusses the ocular effects of nutritional disease, mostly of changes due to vitamin deficiency.

EXPERIMENTAL APPROACH TO THE PATHOGENESIS OF RETROLENTAL FIBROPLASIA.

Bo E. Hellström, M.D. Karolinska Institute and Hospital, Stockholm, 1956.

A basic contribution to the baffling question of how oxygen produces RLF in the immature eye is presented in this collection of 10 papers, of which eight have already appeared in American and European journals. Dr. Hellström of the Karolinska Institute and Hospital began work on this problem in 1952, and with his colleague Dr. Lars Gyllenstein set up the first animal experiments to observe the effect of oxygen exposure on the eyes of newborn mice and rats.

In a valuable introduction Dr.

Hellström sums up the experimental work done by himself and others, notably Patz and Ashton. While a definite understanding of the pathological process of RLF has yet to be reached, much has been learned as to the mechanism of oxygen effect. Oxygen causes an inhibition of the retinal vascularization, and constricts and obliterates those vessels already developed. An abnormal revascularization follows. Prolonged continuous oxygen exposure may lead to atrophic changes of the retina, especially the inner layers. Animals in oxygen frequently show an abnormal electroretinogram. General hypoxia seems to play no role, nor is a primary metabolic lesion of the retina evident in the young animals studied.

Dr. Hellström frequently reminds us that the experimental disease induced by oxygen is not RLF. His findings give a clue to the mechanism of the oxygen effect as far as the primary lesion leading to ischemia is concerned. But the animal experiments do not explain the "progressive course of the reactive, vasoproliferative stages of the disease in premature infants, and further experimental work, with a view to exploring the conditions leading to vitreous organization and the mechanism of retinal detachment, is urgently needed."

MAGIC, MYTH AND MEDICINE. Donald T. Atkinson, M.D. The World Publishing Company, Cleveland. 1956. 307 p. \$5.00.

Dr. Atkinson takes us on a "meandering journey" through four thousand years of man's growing understanding of his body and the arts of healing. This is a book of heroes, from Hippocrates to Lister, and the roster

includes the services of pirates who brought back to Europe knowledge of Indian drugs—cocaine, quinine, ipecac and all the rest.

There is a chapter on certain aspects of the early knowledge of the eye and the development of surgical techniques for cataract and glaucoma—and here most ophthalmologists would not agree with some of Dr. Atkinson's generalizations. Another chapter concerns certain aspects of Carl Credé's crusade against venereal disease and ophthalmia neonatorum. Scattered through the text are passages about eye therapy, already a medical specialty in ancient Egypt and Babylonia. Hammurabi's code of 1900 B. C. set the fees for successful eye surgery and the penalty—loss of a hand—for failure.

INDUSTRIAL VISION. H. W. Hofstetter, Ph.D. Chilton Company, Philadelphia, 1956. 181 p. \$10.00.

Dr. Hofstetter of Indiana University reviews the relationship of vision, visual testing, and visual skills to industrial performance, production and safety. He has assembled material from many sources into a volume intended primarily as a text for undergraduate optometry courses.

The first section gives a general view of the principles and current methods of accident prevention in a country which has perhaps a thousand eye accidents every working day. A highly technical section on vision testing is followed by a discussion of how the various test scores correlate with industrial efficiency. A chapter on compensation for loss of vision explains the mathematical basis for the recent American Medical Association method of appraisal of visual efficiency.

PROGRAM FOR EDUCATORS OF CHILDREN WITH IMPAIRED VISION

Summer Session • July 1 to August 9, 1957
SYRACUSE UNIVERSITY • SCHOOL OF EDUCATION

The following courses are offered in cooperation with the American Foundation for the Blind, Inc., City of New York:

- Development and Education of the Pre-School Blind Child (July 8 to July 26)
- Principles and Methods of Teaching Braille
- Instructional Procedures in the Education of Blind Children

The following courses are offered in cooperation with the National Society for the Prevention of Blindness, City of New York:

- Education of Partially Seeing Children (Theory)
- Education of Partially Seeing Children (Practice)
- Educational Implications of Visual Impairments

Additional courses, workshops, curricula and demonstration school in:

Administration
Cerebral Palsy
Crippled Children
Deaf and Hard of Hearing
Epileptic Children
Gifted Children
Hospitalized and Homebound Children

Mental Retardation
Multiply Handicapped
Psychology of Exceptional Children
Remedial Reading
Severely Retarded Children
Speech Correction
Vocational Rehabilitation

For detailed information regarding courses, housing, tuition, and related matters, write
DR. WILLIAM M. CRUICKSHANK, Director, Education Exceptional Children,
School of Education, Syracuse University, Syracuse 10, New York

RECOMMENDED PRACTICE FOR OFFICE LIGHTING. Illuminating Engineering Society, New York. 1956. 32 p. 50 cents.

This is the Illuminating Engineering Society's first report on office lighting since 1947. It includes results of consultation over the past six years with representatives of the IES Committee on School Lighting; the American Institute of Architects; and the National Council for Schoolhouse Construction. Based on the concept of lighting for specific tasks, the manual introduces the subject with a general description of office operations in which the eyes are used at close range. These include reading duplicated material, handwriting, pencilled stenographic notes, typing and fine print. "The visibility of such work is often poor and more attention should be devoted to its improvement," says the

committee. It recommends specific preferred type sizes, paper finishes, and ink.

In the following sections there are discussions of quantity and quality of illumination; recommended levels, with tables of levels for seeing tasks in 18 typical office departments; glare, including a table of acceptable brightness limitations, and a detailed discussion of reflectances as to finish and color of ceilings, walls, furniture, office machines and equipment, and floors; lighting systems for general and specific office areas. For ordinary office work a minimum of 30 foot candles is recommended. Maintenance is thoroughly covered, including specific plans for cleaning and relamping.

The manual is especially valuable for architects and consulting engineers, building and electrical contractors,

building owners, managers and maintenance personnel; in short, anyone to whom new or improved office lighting is a problem.

PROCEEDINGS OF THE WORLD ASSEMBLY, 1954.

World Council for the Welfare of the Blind, Paris, 1956. 301 p.

This report covers the first plenary meeting of the new international body concerned with problems of the blind, which convened in Paris during August 1954 with delegates from 32 nations. The constructive attitude of the Council is shown by the fact that the first session was devoted to the prevention of blindness.

Dr. P. Baillart, then president of the International Association for the Prevention of Blindness, explained that it was impossible to estimate the world incidence of blindness. The nearest guess would be about 250 blind per 100,000 of population. But some nations, Russia among others, send no figures to the Association, others give obviously inaccurate estimates, and the very areas where blindness is most prevalent cannot undertake a census of the blind.

The more advanced nations have greatly reduced blinding diseases such as leprosy, smallpox and syphilis which are still rampant in other parts of the globe. But there are new dangers peculiar to civilization: retrolental fibroplasia, injuries in sport and industry, and the increase of cataract and glaucoma with the lengthening life span. The prevention of blindness is not a medical problem alone, it is social ophthalmology.

The problem in underdeveloped countries was discussed by John F. Wilson, director of the British Empire Society for the Blind. He estimated

that four-fifths of the blindness in the tropics is preventable, and that countless persons now blind could be cured by a simple operation. The first authoritative picture of blindness in a great part of tropical Africa will be provided by two major surveys undertaken by the Society.

In discussing the giant scourges of onchocerciasis and trachoma Mr. Wilson reported the opinion of experts that mass treatment of trachoma can be effective only where there exists a permanent network of treatment centers covering the whole endemic area. Despite the huge social problems involved, Mr. Wilson expressed his faith that diseases which now blind millions will eventually be conquered by a revolution in medical services and the machinery of mass distribution.

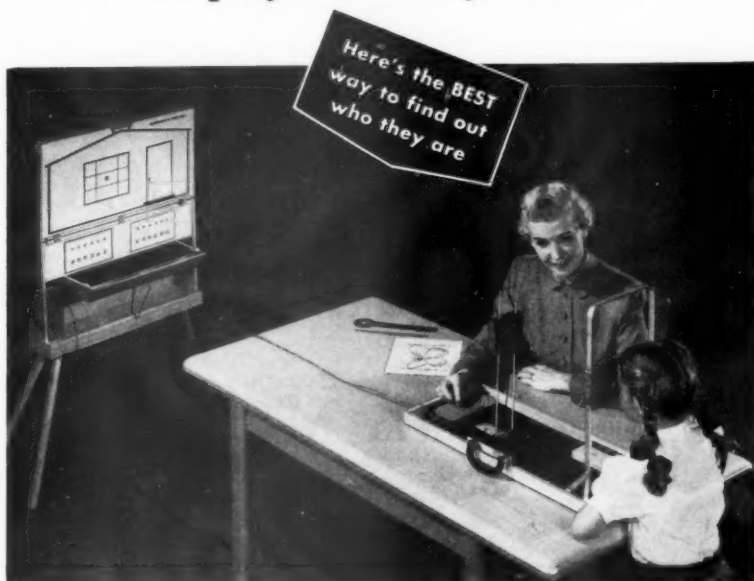
The discussion which followed these two papers showed the delegates' hopes for international action against blindness in their own countries. A Colombia delegate said that prevention of blindness services were almost non-existent in Latin America; a representative of India spoke of its 2,000,000 blind; and a Japanese described the inroads that leprosy was making in eye health. The session ended in a resolution urging that the special agencies of the United Nations such as WHO expand their prevention of blindness work in the underdeveloped nations.

CONFERENCE PROCEEDINGS

Proceedings of the 1957 Annual Conference of the National Society, to be held April 7-10 at the Hotel Statler, New York, will be featured in the Summer Issue of *SIGHT-SAVING REVIEW*. The Fall Issue will also carry some of the papers presented.

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